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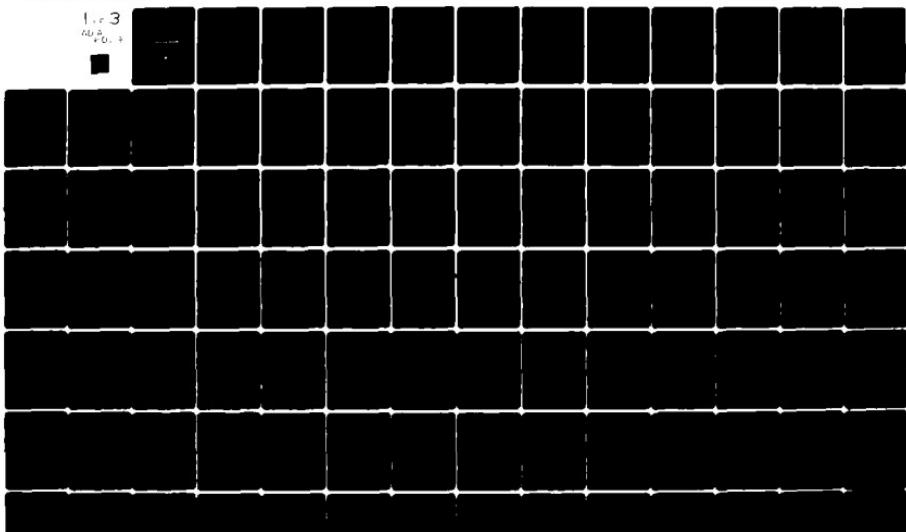
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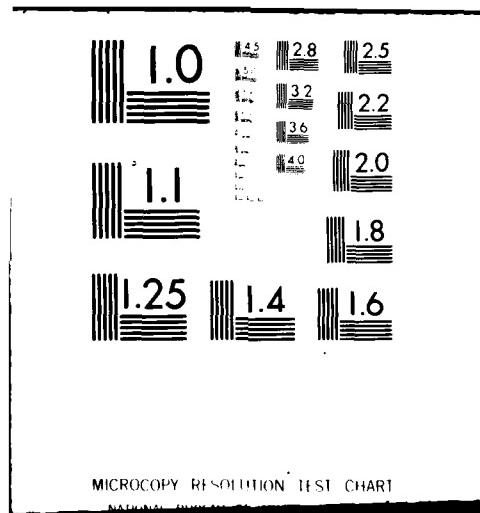
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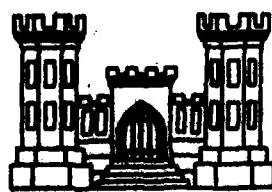


AD A116029

FINAL

ENVIRONMENTAL STATEMENT

EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS



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PREPARED BY:
U.S. ARMY ENGINEER DISTRICT
ST. LOUIS, MISSOURI
June 1978

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
ABSTRACT (Continue on reverse side if necessary and identify by block number) The proposed plan of improvement will provide the Blue Waters Ditch area a segment of the East St. Louis and Vicinity interior flood control project, with protection against interior flooding from a design storm of a 100-year frequency. The principal features of the plan include a pump station and channel improvements with additional and enlarged culverts. Adverse environmental impacts will be noise and dust associated with construction. Flood plain development and restriction of land use in natural detention areas		

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Block 20 (Continued).

may be considered adverse by some. Biological impacts in the immediate areas of construction.

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SUMMARY SHEET

East St. Louis and Vicinity, Illinois, Blue Waters Ditch Improvements

Responsible Office: U.S. Army Engineer District, St. Louis, Missouri

1. Name of Action: Administrative Legislative

2. Description of Action: The proposed plan of improvement will provide the Blue Waters area, a segment of the East St. Louis and Vicinity interior flood control project, with protection against interior flooding from a design storm of a 100-year frequency. The principal features of the plan include a pump station and channel improvements with additional and enlarged culverts. The pump station would have a capacity of 600 cubic feet per second. Other major features include 19,700 feet of a new grass-lined earth channel, 3,650 feet of enlarged channel, 9 new or additional culverts, 17 acres of new wildlife habitat created at one proposed material disposal site, and 32 acres of wildlife habitat buffer located adjacent to new or existing channels.

3. a. Environmental Impacts: The Blue Waters area, including the towns of Cahokia and part of Centreville, will receive protection from interior drainage for a 100-year design storm. Noise and dust associated with construction will be a source of disturbance during the two-year construction period. Minor changes in ground water levels may result. In the immediate areas of construction, the biological impacts are expected to be significant in terms of the limited amount of natural aquatic and terrestrial habitat present. The project design has been developed to allow for fish and wildlife enhancement measures. This design, along with increased public involvement, will hopefully stimulate the need for conservation awareness and appropriate action on the part of the local public. Local population growth and land development should result from the project. Community cohesion may improve in Cahokia and Centreville. A mild threat to public safety may result from location of large ditches near residential areas.

b. Adverse Environmental Impacts: Noise and dust associated with construction. Flood plain development and restriction of land use in natural detention areas may be considered adverse by some. Biological impacts in the immediate areas of construction.

4. Alternatives:

a. Relocation of families affected by flooding

b. Modifications of the proposed plan

c. No action

5. Comments Received:

U.S. Environmental Protection Agency
U.S. Department of the Interior
Advisory Council on Historic Preservation
U.S. Department of Agriculture Forest Service
U.S. Department of Agriculture Soil Conservation Service
Department of Transportation, U.S. Coast Guard
Federal Power Commission
Department of Health, Education, and Welfare
Department of Housing and Urban Development
State of Illinois, Projects Task Force, Department of Conservation
Illinois Archaeological Survey
Southwestern Illinois Metropolitan Area Planning Commission
East-West Gateway Coordinating Council
St. Clair County Office of Administration
Illinois State Chapter of the American Fisheries Society

FINAL

ENVIRONMENTAL STATEMENT

**EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS**

Prepared by

**U.S. ARMY ENGINEER DISTRICT
St. Louis, Missouri
June 1978**



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FINAL ENVIRONMENTAL STATEMENT

EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS

TABLE OF CONTENTS

<u>Par. No.</u>	<u>Title</u>	<u>Page No.</u>
1.	PROJECT DESCRIPTION	1
1.1	INTRODUCTION	1
1.2	LOCATION	1
1.3	HISTORY OF FLOOD PLAIN MODIFICATION	2
1.3.1	INTRODUCTION	2
1.3.2	EAST SIDE LEVEE AND SANITARY DISTRICT	2
1.3.3	CORPS OF ENGINEERS	4
1.4	1975 PLAN OF IMPROVEMENT IN THE BLUE WATERS AREA	5
1.5	REVISED RECOMMENDED PLAN OF IMPROVEMENT	6
1.5.1	PLAN DESCRIPTION	6
1.5.1.1	Station 16	6
1.5.1.2	Subbasin 6	7
1.5.1.3	Station 4	7
1.5.2	EVALUATION	8
2.	ENVIRONMENTAL SETTING WITHOUT THE PROJECT	9
2.1	PHYSICAL ENVIRONMENT	9
2.1.1	GEOGRAPHIC SETTING	9
2.1.2	LAND FORMS	9
2.1.2.1	General Physiographic Regions of the American Bottoms	9
2.1.2.2	Present-Day Landforms of the Blue Waters Area	10
2.1.3	ORIGIN OF THE TERRAIN	10
2.1.3.1	American Bottoms	10
2.1.3.2	Erosive Action of the Mississippi River	10
2.1.3.3	The Ice Age	11
2.1.3.4	Recent Developments	11
2.1.4	ECONOMIC GEOLOGY	12
2.1.5	SOILS	12
2.1.5.1	American Bottoms	12
2.1.5.2	Blue Waters	12
2.1.6	HYDROLOGICAL ELEMENTS	13
2.1.6.1	Existing Surface Water	13
2.1.6.2	Groundwater	13
2.1.6.3	Future Water Requirements	14
2.1.6.4	Water Quality	14
2.1.7	CLIMATOLOGICAL ELEMENTS OF THE AMERICAN BOTTOMS	14
2.1.7.1	General	14
2.1.7.2	Temperature	14
2.1.7.3	Precipitation	16
2.1.8	AIR QUALITY	16

TABLE OF CONTENTS (Cont'd)

<u>Par. No.</u>	<u>Title</u>	<u>Page No.</u>
2.2	BIOLOGICAL ELEMENTS	17
2.2.1	INTRODUCTION	17
2.2.2	BIOLOGICAL COMMUNITIES	17
2.2.2.1	Original Communities	17
2.2.2.2	Present Habitat Types	17
2.2.2.3	Urban - 3,680 Acres	18
2.2.2.4	Agricultural - 3,430 Acres	18
2.2.2.5	Old Field - 590 Acres	18
2.2.2.6	Bottomland Forest - 80 Acres	19
2.2.2.7	Marshes - 80 Acres	19
2.2.2.8	Ponds and Lakes - Negligible Acreage	19
2.2.2.9	Ditches - 420 Acres	20
2.2.2.10	Ditch Margin - Negligible Acreage	20
2.2.3	SPORT FISH AND WILDLIFE	20
2.2.3.1	Fishing	20
2.2.3.2	Hunting	20
2.2.3.3	Endangered Species	21
2.2.4	PEST SPECIES	21
2.2.4.1	Insects	21
2.2.4.2	Arachnids	22
2.2.4.3	Rodents	22
2.3	SOCIO-CULTURAL ENVIRONMENT	23
2.3.1	INTRODUCTION	23
2.3.2	HISTORICAL SOCIO-CULTURAL DEVELOPMENT	
2.3.2.1	American Bottoms	23
2.3.2.2	Blue Waters Area	24
2.3.3	SOCIO-CULTURAL CHARACTERISTICS	
2.3.3.1	Demography	24
2.3.3.2	Housing	27
2.3.3.3	Education	28
2.3.3.4	Crime Patterns	29
2.3.3.5	Health	29
2.3.4	EXISTING LAND USE	30
2.3.5	AGRICULTURE	30
2.3.5.1	Introduction	30
2.3.5.2	Farm Operators	32
2.3.5.3	Land Tenancy	33
2.3.5.4	Farm Operation	33
2.3.5.5	Crops and Land Use	33
2.3.5.6	Problems	34
2.3.5.7	The Future	35
2.3.6	OUTDOOR RECREATION	35
2.3.6.1	East St. Louis and Vicinity Study Area	35
2.3.6.2	Outdoor Recreation Space in Blue Waters	37

TABLE OF CONTENTS (Cont'd)

<u>Par. No.</u>	<u>Title</u>	<u>Page No.</u>
	2.3.7 HISTORICAL RESOURCES	37
	2.3.7.1 Archeology	37
	2.3.7.2 Historical Sites	39
	2.3.8 FUTURE SETTING WITHOUT THE PROJECT	40
3.	RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLAN	41
	3.1 PLANNED FUTURE LAND USE IN BLUE WATERS	41
	3.2 ZONING	41
	3.3 LAND USE PLANS	41
	3.3.1 COMMUNITY PLANS	41
	3.3.2 REGIONAL PLANS	41
	3.4 COMPARISON OF PLANS	42
4.	ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION	43
	4.1 IMPACT ON PHYSICAL ASPECTS OF THE ENVIRONMENT	43
	4.1.1 IMPACT OF CONSTRUCTION	43
	4.1.2 IMPACT OF THE PROJECT	43
	4.1.2.1 Landforms	43
	4.1.2.2 Groundwater	43
	4.1.2.3 Water Quality	44
	4.2 BIOLOGICAL IMPACTS	
	4.2.1 BIOLOGICAL COMMUNITIES	44
	4.2.2 SPORT FISH AND WILDLIFE	45
	4.2.3 THREATENED OR ENDANGERED SPECIES	45
	4.2.4 PESTIFEROUS SPECIES	46
	4.3 IMPACTS ON SOCIO-CULTURAL ASPECTS OF THE ENVIRONMENT	46
	4.3.1 INTRODUCTION	46
	4.3.2 POPULATION GROWTH	46
	4.3.3 LAND USE	47
	4.3.3.1 Flood Plain Development	47
	4.3.3.2 Preservation of Storage Areas	48
	4.3.4 OUTDOOR RECREATION	49
	4.3.5 COMMUNITY COHESION	49
	4.3.6 PUBLIC SAFETY	50
	4.3.7 CULTURAL RESOURCES	50
	4.3.7.1 Archeological Sites	50
	4.3.7.2 Historical Sites	50
5.	ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED	53
	5.1 GENERAL	53
	5.2 ADVERSE IMPACTS RESULTING FROM CONSTRUCTION OR OPERATION OF THE PROJECT	53
	5.2.1 CONSTRUCTION	53
	5.2.2 LAND USE	53
6.	ALTERNATIVES TO THE PROPOSED ACTION	54
	6.1 FORMULATION OF PLANS	54
	6.2 RELOCATION	55
	6.3 NO ACTION	55

TABLE OF CONTENTS (Cont'd)

<u>Par. No.</u>	<u>Title</u>	<u>Page No.</u>
6.4	1975 PLAN	57
6.5	NATIONAL ECONOMIC DEVELOPMENT (NED) PLAN	57
	6.5.1 INTRODUCTION	57
	6.5.2 IMPACT OF THE NED PLAN ON THE ENVIRONMENT	57
	6.5.2.1 Physical Environment	57
	6.5.2.2 Biological Environment	58
	6.5.2.3 Socio-Economic Environment	58
6.6	ENVIRONMENTAL QUALITY PLAN	60
	6.6.1 GENERAL	60
	6.6.2 FEATURES OF THE EQ PLAN	60
	6.6.2.1 Nonstructural	60
	6.6.2.2 Structural	60
	6.6.2.3 Preservation and Enhancement of Wildlife Habitat	62
	6.6.3 IMPACTS OF THE ENVIRONMENTAL QUALITY PLAN	63
	6.6.3.1 General	63
	6.6.3.2 Physical	64
	6.6.3.3 Biological	64
	6.6.3.3.1 Nonstructural Action	64
	6.6.3.3.2 Structural Action	64
	6.6.3.3.3 Preservation and Enhancement of Fish and Wildlife Habitat	64
	6.6.3.4 Socio-Economic	65
	6.6.3.4.1 Population	65
	6.6.3.4.2 Land Use	65
	6.6.3.4.3 Outdoor Recreation	65
	6.6.3.4.4 Public Safety and Health	66
	6.6.3.4.5 Archeological Sites	66
	6.6.3.4.6 Historic Sites	66
	6.7 SYSTEM OF ACCOUNTS	67
7.	THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY	72
8.	ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED	73
9.	COORDINATION WITH OTHERS	74
	9.1 PUBLIC PARTICIPATION	74
	9.1.1 PUBLIC INVOLVEMENT - FIRST LEVEL	74
	9.1.2 PUBLIC INVOLVEMENT - SECOND LEVEL	74
	9.1.3 SPECIAL INTERESTS - THIRD LEVEL	75

TABLE OF CONTENTS (Cont'd)

<u>Par. No.</u>	<u>Title</u>	<u>Page No.</u>
9.2	GOVERNMENT AGENCIES	75
9.3	COORDINATION OF THE DRAFT ENVIRONMENTAL STATEMENT	76
9.3.1	REVIEW COMMENTS AND RESPONSES FROM MARCH 1974 COORDINATION	77
a.	United States Environmental Protection Agency	77
b.	United States Department of the Interior	80
c.	Advisory Council on Historic Preservation	88
d.	United States Department of Agriculture Forest Service	89
e.	United States Department of Agriculture Soil Conservation Service	91
f.	Department of Transportation, United States Coast Guard	93
g.	Federal Power Commission	94
h.	Department of Health, Education, and Welfare	95
i.	Department of Housing and Urban Development	96
j.	State of Illinois, Projects Task Force, Department of Conservation	98
k.	Illinois Archeological Survey	100
l.	Southwestern Illinois Metropolitan Area Planning Commission	101
m.	East-West Gateway Coordinating Council	103
n.	St. Clair County Office of Administration	104
o.	Illinois State Chapter of the American Fisheries Society	105
9.3.2	REVIEW COMMENTS AND RESPONSES FROM APRIL 1975 COORDINATION	106
a.	United States Department of the Interior	106
b.	United States Environmental Protection Agency	108
c.	Department of Transportation, U.S. Coast Guard	109
d.	St. Clair County Board	110

TABLES

<u>Table No.</u>	<u>Title</u>	<u>Page</u>
1	Assessment of Blue Waters Drainage Water Quality	15
2	Population of St. Clair County and Blue Waters Area Communities 1950-1970	25
3	Age Distribution of Blue Waters Area, St. Clair County and the St. Louis SMSA by percent	26
4	Workers by Occupational Category by Percent 1970	27
5	All Housing Units; Year Structure Built by Percent	28
6	Location Quotient Land Uses, Blue Waters Area	31
7	Outdoor Recreation Space Standards	36
8	Archeological Sites in the Blue Waters Area	38
9	Impact on Rare and/or Endangered Species of the U.S. and Illinois	51
10	Environmental Quality Plan, Areas and Costs	61
11	System of Accounts	67

PLATES

<u>Plate No.</u>	<u>Title</u>
1	East St. Louis and Vicinity
2	Proposed Plan of Improvement, 1962
3	Location of Blue Waters Area
4	Blue Waters Area
5	Area Flooded by 100-Year Criteria Storm
6	Proposed Plan of Improvement
6A	Area Flooded by 100-Year Criteria Storm with Recommended Improvements in Place
7	Major Physical Regions
8	Soils
9	Forest Cover
10	Habitat Types
11	Census Tracts
12	Population Character
13	Generalized Existing Land Use
14	East-West Gateway Regional Land Use Plan, 1973
15	SIMAPC Land Use Plan

FIGURES

<u>Figure No.</u>	<u>Title</u>
1	Cahokia Area Housing
2	Centreville Area Housing
3	Crime Patterns in Blue Waters Communities, 1972
4	Rail Yards, Blue Waters Area
5	Mixed Urban-Agricultural Land Use, Blue Waters Area
6	Commercial Land Use, Blue Waters Area
7	Industrial Land Use, Blue Waters Area
8	Vacant Land, Blue Waters Area
9	Residential Land Use, Blue Waters Area
10	Type of Ownership by Harvested Cropland, Blue Waters Area and St. Clair County
11	Crop Production by Percent of Total Harvested Acre
12	Average Crop Yields, Blue Waters Area - 1972, St. Clair County - 1969, and Illinois - 1969
13	Church of the Holy Family
14	Old Cahokia Courthouse
15	Jarrot House
16	Pitzman School

APPENDICES

<u>Appendix No.</u>		<u>Page</u>
A	Economic Data	A-1
B	1975 Plan	B-1
C	State of Illinois, Letter of Intent	C-1
D	Letters of Review, March 1974	
	U.S. Environmental Protection Agency	D-1
	U.S. Department of Interior	D-3
	Advisory Council on Historic Preservation	D-9
	U.S. Department of Agriculture	
	Forest Service	D-11
	Soil Conservation Service	D-13
	Department of Transportation, U.S. Coast Guard	D-15
	Federal Power Commission	D-17
	Department of Health, Education and Welfare	D-19
	Department of Housing and Urban Development	D-20
	State of Illinois - Projects Task Force	D-22
	Illinois Archeological Survey	D-24
	Southwestern Illinois Planning Commission	D-25
	East-West Gateway Coordinating Council	D-27
	St. Clair County	D-28
	Illinois Chapter, American Fisheries Society	D-29
E	Letters of Review, April 1975	
	U.S. Department of Interior	E-1
	Department of Transportation, U.S. Coast Guard	E-3
	U.S. Environmental Protection Agency	E-4
	St. Clair County	E-5
1	Environmental Inventory, Parts A and B (Trans- mitted With the Draft Statement Only)	

1. PROJECT DESCRIPTION

1.1 INTRODUCTION

The Flood Control Act of 27 October 1965 (PL 89-298) authorized a system of structural improvements be constructed in the interest of flood control and other allied purposes for East St. Louis and Vicinity, Illinois. There appeared to be several water and land resources needed in the area, paramount being a need for interior flood control and related flood plain management. Due to changed social and economic conditions, new national priorities, and changing public attitudes, the original plan, as published in House Document No. 329, 88th Congress, 2d Session, has been made partially obsolete. Therefore, reformulation of the original plan was necessary in order to better address present and anticipated future needs.

In an effort to move more swiftly to solve water resource problems in the American Bottoms, a small geographical area was designated for immediate post-authorization planning. The selection of this unit, known as the Blue Waters Ditch area, was based on the following considerations:

- a. Sufficient funds were available to complete advanced engineering and design within a realistic time frame.
- b. The area could be separated as a hydrologic entity for design purposes.
- c. The State of Illinois indicated willingness to furnish assurances of non-Federal interests in order to move the project forward.

The purpose of this document is to present a general discussion of the environment of the entire project area, and to specifically explore the environmental impacts occasioned by the Blue Waters Ditch area plan of improvement.

1.2 LOCATION

The East St. Louis and Vicinity study area is in Illinois directly across the Mississippi River from St. Louis, Missouri (see Plate 1). This area contains approximately 80,600 acres of flood plain land bounded to the east by limestone bluffs, to the north and south by flank levees, and to the west by a front levee and the Mississippi River. The study area encompasses most of the American Bottoms. The American Bottoms comprises one of the widest portions of the flood plain of the Mississippi River north of Cape Girardeau. The area is the location of many medium-sized cities, such as Cahokia, East St. Louis, and Granite City, resulting in the largest population of any part of the flood plain of the Mississippi River north of New Orleans.

Another of the early tasks of the District was the construction of a levee during the period 1911-1915 to protect against flooding from the Mississippi River. The resulting levee system, consisting of a riverfront levee along the east bank of the Mississippi River and flank levees on the north along the Cahokia Diversion Channel and on the south along the Prairie du Pont floodway, now protects most of the American Bottoms against a flood with a probability of occurrence of 200 years or a level of 52 feet on the Market Street gauge. The Flood Control Act of 1936 authorized the U. S. Army Corps of Engineers to strengthen these levees; this Federal project was essentially complete in 1968 at a Federal expenditure of \$21.9 million and a non-Federal cost of \$1.4 million.

The Levee District also dealt with the interior water. In 1916, improvements (largely straightening and deepening) were begun on a portion of Cahokia Creek. In 1920, construction began on Canal No. 1, which was to go along the base of the bluffs from Prairie du Pont floodway and cutoff all the streams before they entered the flood plain; however, the canal was never completed and now receives just the water from one upland stream, Powdermill Creek, and a small area around the canal.

Hence, within two decades after the flood of 1903, the East Side Levee and Sanitary District had a system to protect the American Bottoms from the Mississippi River, from the major hillside tributary streams, and to some extent, from interior water. Additional laterals to the major ditches have since been constructed, and some streams have been relocated, the levees have been raised, but by and large the flood protection and drainage system established by the District during its initial years is the system that exists today (Plate 1).

The effectiveness of the parts of the system varies. The protection offered by the levees has so far been complete, with the levees never having been overtopped. The Cahokia Diversion Channel and the Prairie du Pont floodway have also worked effectively since their installation, though the maintenance of the low water dam in the Cahokia Diversion Channel has been difficult. Unfortunately, the same cannot be said for the interior drainage system. By and large, the remaining tributary upland streams still deposit more water than the bottomland canals, lakes, and ditches can hold, with resultant overflow; and heavy rains still cause damage by ponding in agricultural and urban areas.

The extent of the interior drainage problem was demonstrated by two major floods in the 1940's. The flood of July 9, 1942, was the largest of record at that time and resulted from a relatively short and intense rainfall. Damage in the Bottoms area was estimated at \$300,000. Four years later, on August 15-16, 1946, the largest interior flood of record occurred, both in peak rate of flow and total volume of runoff. Total rainfall over

the various watersheds ranged from 11.7 inches to 15.15 inches, of which 8.8 to 12.1 inches appeared as runoff. The flood exceeded the capacity of all interior drainage facilities in the area and extensive flooding occurred. Damage in Madison and St. Clair Counties was estimated to be \$6,000,000, and it is likely that the great majority of the damage occurred in the project area.

As with the flood of 1903, the interior floods of the 1940's, and especially the flood of 1946, spurred the local people into action. In December 1946, a Committee of Engineers, formed by the Mayor and Commissioners of the City of East St. Louis, submitted a report outlining four plans by which protection from floods might be obtained. Various plans included the enlargement of drainage facilities and construction of intercepting channels and detention areas and reservoirs.

The committee's report did not result in actual construction, but it is likely that the report did lead to action on the part of the General Assembly of the State of Illinois. In 1949, the legislature passed a bill which provided up to \$250,000 for surveys and investigations necessary for the development of a comprehensive plan for flood control and major drainage improvements in the area organized as the East Side Levee and Sanitary District. The State of Illinois Department of Public Works and Buildings, Division of Waterways, submitted their report in 1950, which suggested the extension of Canal No. 1 to Schoenberger Creek and the construction of several storage areas in the Bottoms. The cost was estimated at that time to be \$13 million. Apparently no construction of the canal or the detention areas resulted from the 1950 report.

Two later floods further accented the nature of the flooding problems. In June 1957, a storm centered in the Centreville area produced 14.4 inches of rain in less than 16 hours. An estimated 60% of the Blue Waters basin was flooded; damages were extensive and seven deaths were attributed to the flood in the entire American Bottoms area. This very rare event was followed in May 1961 by another flood which also resulted in intensive damages to the area. This flood was approximately a 50-year event and during the peak rainfall period 9.2 inches occurred during a 48-hour period.

1.3.3 CORPS OF ENGINEERS

In the summer of 1957, the Congress of the United States directed the Corps of Engineers to review the reports on the comprehensive flood control plan of the Ohio and Lower Mississippi Rivers and other applicable reports with particular reference to all streams in St. Clair and Madison Counties, Illinois, flowing into the Kaskaskia and Mississippi Rivers with a view to providing improvements in the interest of flood control and related purposes.

In 1962 the Corps reported on the extent of flood damages in the East St. Louis and Vicinity study area. It was estimated that some 18,000 acres, generally near the eastern bluff, were subject to damage due to the ponding of interior water. In the Blue Waters area, an estimated 2,000 acres were noted as susceptible to surface interior water damage, including a large number of residences. Total damages from the ponding in the study area were estimated in 1962 at \$627,000 annually at present development (1962), while anticipated future development was projected to increase this estimate of annual losses to \$980,000.

The 1962 report also proposed a solution to the interior water problems (Plate 2). The principal elements of the plan in the Madison County portion of the American Bottoms were the construction of 11.7 miles of channel improvements, 1.6 miles of new channels, construction of three detention areas of a total of 1,700 acres, and the utilization of the existing 2,000-acre Horseshoe Lake as a detention area. In St. Clair County the major elements were the construction of 0.7 miles of new channel, construction of a detention dam and reservoir of about 120 acres of Little Canteen Creek, construction of a new pumping station on Blue Waters Ditch having a capacity of 414 cubic feet per second, construction of two detention areas with perimeter levees covering a total of 775 acres, and utilization of the existing 260-acre Grand Marais Lake as a detention area. The total costs of the improvements were estimated in 1962 at \$6,840,000, of which \$3,680,000 would be Federal cost and \$3,160,000 non-Federal cost. The benefit-cost ratio for the plan was 1.8 to 1. In a letter of November 9, 1962, the trustees of the East Side Levee and Sanitary District stated their willingness and legal authority to act as a local sponsor for the plan of interior flood control improvement. In the Flood Control Act of 27 October 1965 (PL 89-298), Congress authorized that a system of structural improvements be constructed in the interest of flood control and other allied purposes for East St. Louis and Vicinity, Illinois. In 1969, the State of Illinois indicated a willingness to act as the local sponsor in lieu of the East Side Levee and Sanitary District.

1.4 1975 PLAN OF IMPROVEMENT IN THE BLUE WATERS AREA

The Blue Waters area located along the southern flank of East St. Louis and Vicinity (Plates 3 and 4) was selected as the first segment of the interior flood control plan for East St. Louis and Vicinity. This locale comprises approximately 8,360 acres of urban and agricultural land and is subject to frequent periods of inundation resulting from inadequate interior drainage. The extent of flooding, which under present conditions would be expected to occur on a 100-year frequency, is shown in Plate 5.

The authorized plan for Blue Waters as outlined in the 1962 report called for the construction of a pumping station with a 414 c.f.s. capacity at a static head of 30 feet. This capacity was considered adequate to contain the runoff from a 50-year frequency

noncoincidental storm (i.e., low stages on the Mississippi River). No new or improved ditching was considered necessary at that time.

This authorized plan of improvement was reevaluated and updated through the planning process which culminated in the proposed plan reported in the draft Environmental Statement released by the St. Louis District, July 1975. This recommended plan called for the improvement or construction of approximately 15 miles of channel, a 2,600 c.f.s. pump station, and the regulation or acquisition of two low-lying areas totaling 1,000 acres as natural storage detention sites. It is this plan that comments and responses contained in Section 9 of this final Environmental Statement are in reference to. A description of this plan is included in this final Environmental Impact Statement as Appendix B.

1.5 REVISED RECOMMENDED PLAN OF IMPROVEMENT

Subsequent to issuing the draft Environmental Statement for improvements in the Blue Waters area, further iterations in the planning process have resulted in revisions in the 1975 plan that was presented in the draft Environmental Statement. This revised recommended plan is shown in Plate 6 and is described below. A detailed discussion of the selection of this recommended plan occurs in Section 6 of this statement.

1.5.1 PLAN DESCRIPTION

The proposed plan of improvements provides for a 600 cubic feet per second capacity pump station, for new and enlarged grass-covered earth channels with wildlife habitat buffers, and for additional culvert capacity. Another integral part of the plan of improvement could provide for regulation of the 100-year flood plain. Regulation is required to preclude development within the boundaries of these areas. These flood plain areas, to be regulated by the State of Illinois and local governmental bodies, are within the existing 100-year flood plain (Plate 5). The 100-year flood outline with these improvements in place is shown in Plate 6a. The proposed plan may be best described by breaking the overall area into the following three sections: (1) Station 16, (2) Sub-basin 6, and (3) Station 4.

1.5.1.1 STATION 16

Channel improvements at Station 16, ICRR Ditch, are planned to allow water falling on Sub-basins 14, 15, and 16 to exit and empty into Sub-basin 12 immediately downstream. In Sub-basins 14, 15, and 16, approximately 4,700 feet of earth channel, with a bottom width of 5 feet and 1 on 3 side slopes, would be constructed upstream of the Illinois Central Railroad tracks. The average depth would be about 6 feet. From that point and continuing about 4,100 feet until the channel intersects Goose Lake Ditch, a 10-foot bottom width would be provided. The depth would vary from 5 to 14 feet in this reach. As shown in

Plate 6, three 84-inch CMP culverts would be constructed. Two of the three culverts would extend under roads and one under the Illinois Central Railroad tracks. The proposed ditch would be extended downstream from the outlet of Sub-basin 16 to insure that no flooding would occur downstream of this area due to this new outlet. A 25-foot-wide environmental wildlife habitat buffer would be located immediately adjacent of the left side of the earth ditch downstream of the Illinois Central Railroad tracks. Upstream of the railroad crossing, in Sub-basins 14, 15, and 16, the wildlife buffer would be located on the right side of the ditch.

1.5.1.2 SUB-BASIN 6

Approximately 5,800 feet of 10-foot bottom width, grass-covered earth channel with 1 on 3 side slopes would be constructed. The depth would vary from 3 to 10 feet. In the Sub-basin 6 area, a total of four new culverts would be located, as shown in Plate 7. In the 2,150-foot-long reach immediately downstream of Camp Jackson Road, no channel improvements would be made as the runoff passes through the existing Lily Lake. This reach ends at St. John Drive at the concrete weir. The weir would maintain water in this portion of Lily Lake. During rainfall periods, runoff would fill the lake, would overflow the weir, and would then pass downstream through the new earth channel, Lily Lake Ditch. A 25-foot-wide environmental habitat buffer would be located on both sides of the improvements in Sub-basin 6, except in two short reaches. In the vicinity of St. John Drive, because insufficient open land is available without relocating structures, the buffer would be located on one side only. In the most upstream 1,800 feet of the new channel, the buffer would be located only on the left side, because Paris Street is adjacent to the right side.

1.5.1.3 STATION 4

The major proposed improvement for Station 4 is the 600 cubic feet per second capacity conventional design pumping station located as shown in Plate 6. Two additional 72-inch CMP culverts must be added to the existing culverts for the road crossing located just east of the proposed pump station location. A 25-foot-wide environmental buffer would be located on existing right-of-way along one side of the Blue Waters and Goose Lake Ditches, a total length of 26,500 feet. Two short reaches along Goose Lake Ditch would have a buffer zone on both sides extending for an additional 1,500 feet.

Mo-Pac West Ditch

This existing ditch would be extended for 1,200 feet to St. Joseph Gardens subdivision. The extension would have a 6-foot bottom width with 1 on 3 side slopes. The 25-foot-wide wildlife buffer would be adjacent to the right side of this channel.

Highway 3 Ditch

This new grass-lined earth channel would extend 3,800 feet in length north of the South Cahokia Ditch and would have a 6-foot bottom width with 1 on 3 side slopes. The environmental buffer, 25 feet wide, would be on the right side of this new ditch.

South Cahokia Ditch

This existing ditch would be enlarged over a length of approximately 1,900 feet and would have a 20-foot bottom width with 1 on 3 side slopes. Two new 78-inch CMP culverts would be required, as shown in Plate 6. The 25-foot-wide environmental buffer would be located on the left side of the ditch.

Ditch "C"

This existing grass channel would be improved to provide a 12-foot bottom width with 1 on 3 side slopes and would extend for 1,750 feet upstream of the South Cahokia Ditch at Water Street.

1.5.2 EVALUATION

The proposed plan of improvement is relatively straightforward from a technical engineering and construction standpoint. Using a discount rate of 6-1/8 percent, the proposed plan is economically justified. The annual construction and land acquisition costs, together with operation, maintenance, replacement, and power costs, would amount to \$717,000. The annual benefits are estimated at \$968,000, resulting in a benefit-cost ratio of 1.35. The total average annual benefits are derived from two benefit categories: flood damage reduction based on existing conditions, and the affluence factor benefits due to the increased future value of the contents of existing houses. Using the authorized discount rate of 3-1/4 percent, the proposed plan has a benefit cost ratio of 2.27. A summary of project economic evaluation is presented in Appendix A.

2. ENVIRONMENTAL SETTING WITHOUT THE PROJECT

2.1 PHYSICAL ENVIRONMENT

2.1.1 GEOGRAPHIC SETTING

Beginning at Alton-Wood River, Illinois, and stretching 80 miles south to Chester, Illinois, the Mississippi River has carved a broad, lens-shaped alluvial plain, known as the American Bottoms. The American Bottoms are entirely on the Illinois or eastern bank of the Mississippi, and directly contrasts the narrow or non-existing flood plain on the Missouri or western bank. The extensive flood plain, with its many lakes and streams and varying topography, derived its name from the early American settlers. In time, the northern section of the Bottoms, from Alton to Dupo, became the industrial and population center of the Bottoms. This wide section is referred to as the East St. Louis and Vicinity study area.

The Blue Waters area lies in the southern half of the East St. Louis and Vicinity study area (Plate 3). Blue Waters is an 8,360-acre drainage unit located in St. Clair County, Illinois, west of the bluffs of the American Bottoms, east of the Mississippi River, south of U. S. Route 460, and north of the Harding Ditch. The Village of Cahokia is entirely within the Blue Waters area, as are portions of Centreville, East St. Louis, and Sauget. A period of extensive settlement by aborigines, Europeans, and Africans, has produced significant environmental modification in the physical setting, and has resulted in the current urban and agricultural land uses.

2.1.2 LAND FORMS

2.1.2.1 General Physiographic Regions of the American Bottoms

The intricate patterns of landform that exist in the American Bottoms are the result of a complex geologic history. The landforms may be classified into six regions, being delimited by factors of geologic origin, soils, and topographic breaks (Plate 7). The largest region is Ridge and Swale, which has an undulating surface of long linear high areas called ridges and long narrow low areas called swales, along with large flat, low areas which were once lakes. This region, which includes the Blue Waters area, is that part of the flood plain that has been reworked by the river fairly recently. A second region is the Mitchell Flats. This is a very level area of little local relief, with resultant poor drainage. A third Bottomland region is the East St. Louis High. This is a complex physical region that is generally higher and flatter than the surrounding ridge and swale topography; included in this region are

the Grand Marias Lakes. The Terrace Region, the fourth region in the American Bottoms, is a high, sandy remnant of the earlier glacial-produced flood plain. A fifth region, which is directly related to the uplands, is the alluvial fan region, which was produced by material washing down from the uplands into the Bottoms. The last region is the dissected uplands, which have small, fairly flat hilltops and steep slopes along the stream channels.

2.1.2.2 Present-day Landforms of the Blue Waters Area.

The majority of the land in the Blue Waters area is ridge and swale in character, a result of the meandering actions of the Mississippi River. The remainder of the area, such as land north and east of Bi-State Airport and land in the southeastern portion, shows the flatness expected of former lake beds (Goose Lake and Cahokia Lake, respectively). Bordering the northern part of the area is the edge of the East St. Louis High.

2.1.3 ORIGIN OF THE TERRAIN

2.1.3.1 American Bottoms

The terrain of the American Bottoms is the result of action which has been taking place in the area for an extensive period of time. For analytical purposes, the development is divided into four chronological periods.

Beginning some 500-600 million years ago, following a long period of igneous activity, most of the Mississippi Valley was intermittently submerged by shallow seas advancing and retreating in response to crustal movements in the Appalachian and nearby Ozark areas. The advancing seas produced marine deposition, and then, with their retreat, came erosion. A cycle of such submergence-deposition-emergence-erosion-resubmergence continued for nearly 300 million years and produced in the process over 3,500 feet of sedimentary rocks, most of them limestone and shales with some coal. Some 280 million years ago, the seas withdrew completely and the area became land, never to be submerged again, though subject to constant erosion. Due to later movements within the earth's crust, the rocks became tilted, dropping slightly to the east, with an additional slight north-south bend in the vicinity of the American Bottoms.

2.1.3.2 Erosive Action of the Mississippi River

Beginning some 200 million years ago a water course, which is now called the Mississippi River, began moving through the study area. Encountering some relatively soft rocks (shale and coal), the river removed

most of them and then continued cutting into the harder materials underneath, creating a valley of nearly the current width, but deeper, within the sedimentary rocks. Due to the nature of the rock structure, the softer materials did not exist at the same elevation north or south of the American Bottoms, thus the river valley north of Alton and south of Dupo is narrower than the study area.

2.1.3.3 The Ice Age

The Ice Age, which began around a million years ago, was the next major event that influenced the topography of the American Bottoms. It is not clear if the first two glaciers (Nebraskan and Kansan) reached the study area, but it is known that the leading edge of the third glacier (Illinoian) covered the area. Observable results of this glacial activity are large boulders on the bedrock surface of the river valley, the deposition of unsorted and some sorted material on the uplands, and the creation of a soil, termed the Sangamon soil, in the uplands. The fourth (Wisconsinan), and last, continental glacier, stopped 75 miles north of the Blue Waters area 75,000 years ago, but it had a marked impact on the present terrain. First of all, the valley of the Mississippi, which was the major drainage way for the sediment-laden meltwaters, became filled by glacial material to a depth of at least 150 feet. Secondly, the uplands which form the eastern boundary of the American Bottoms received deposits of fine material which the wind picked up from the river valley during non-flood periods; this wind-blown material, called loess, attained a thickness of at least 50 feet in places adjacent to the flood plain (its source), with a progressive decline in thickness further east. A probable third impact of the last glacier was a widening of the valley, due to the huge volume of water carried by the glacial-influenced Mississippi River.

2.1.3.4 Recent Developments

With the melting and final disappearance of the glacier and the accompanying decrease in the depositable material that was carried, the erosive strength of the Mississippi was increased and the river began to remove the previously deposited valley fill. Through time, the Mississippi removed nearly 50 feet of meltwater-deposited materials in its travels across the broad flood plain level, leaving only a few remnants of the earlier (glacial) flood plain level, but also leaving the bedrock valley filled to a depth of at least 100 feet by meltwater alluvium. It also reworked most of the surface materials into the present complex patterns of land and water. The upland streams, generally following the old pre-glacial bedrock valleys, the carving of which began some 300 million years earlier, worked at removing the previously deposited wind-blown material (loess); how much upland material was removed is not known.

By and large, the landforms in the Blue Waters area developed in a manner similar to that just described for the Bottoms as a whole. The underlying strata were formed by deposition; they were eroded by the Mississippi River; and they were then covered by water-deposited glacial debris. The key period in terms of the present surface is associated with fairly recent (geologically) actions of the Mississippi; unfortunately, very little detailed information is available for the Blue Waters area, or for most other areas of similar limited size. Current evidence (primarily archaeological) suggests that most of the present topographic patterns result from river actions that took place at least 1,000 years ago. This is shown by the location of aboriginal sites on the ridges of the ridge and swale topography. Such settlement sites must post date the development of the ridges. The land generally west of Route 3 is of a much more recent origin (probably 18th to 19th century), while the removal of the lakes is mostly a man-made 20th century action.

2.1.4 ECONOMIC GEOLOGY

There are no mineral deposits of any importance in the Blue Waters Area. The surficial sands are rather silty and the water table is close to the surface which would complicate any mining operation. Also, it is doubtful that a sand pit operation could compete successfully with the sand dredges operating in the Mississippi River.

2.1.5 SOILS

2.1.5.1 American Bottoms

The American Bottoms contains three generalized soil categories. By and large, the flat, elevated areas, such as the Mitchell Flats, are primarily silty clay soils. The irregular areas, such as the ridge and swale terrain, contain fine sandy loam or silt loam soils. The silt loam soils are also found at the base of the bluffs in the alluvial fan physiographic region and in the dissected uplands. Finally, the low, flat areas of former lake beds found in the ridge and swale region, such as Goose Lake, are composed primarily of silty clays.

2.1.5.2 Blue Waters

As would be expected, considering their waterborne origin, the soils in the Blue Waters area are very much related to the topography. Generally, the higher areas, especially the ridges, have a surface of fine sandy loam soils and silt loam soils, while the lower areas such as swales and especially the large old lake beds, are primarily silty clays. As Plate 8 indicates, the soils, with appropriate management, are good for agriculture, though they do present limitations for urban use (silty clay - silt loam). However, with careful engineering and the necessary monetary expenditures, these soil limitations for urban purposes can generally be overcome.

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2.1.6 HYDROLOGICAL ELEMENTS

Having previously discussed the past and current drainage conditions in the American Bottoms and Blue Waters area elsewhere in the report, this section on water in the Bottoms and Blue Waters deals with existing surface water, future water needs, and water quality.

2.1.6.1 Existing Surface Water

Considering the original water resources in the American Bottoms, there is at present a limited amount of permanent surface water. There are few major streams in the American Bottoms and none in the Blue Waters area (hence no stream gauging data) though there are a few major ditches, including Blue Waters and Goose Lake in the area. The only permanent lake is Lily Lake, a small recreational lake created in a low area. Yet, like McDonough, Horseshoe, and Grand Marias Lakes, the size of Lily Lake has greatly decreased over the years. None of the surface water resources on the Bottoms, including those in the Blue Waters area, are used as a source of supply for domestic purposes.

2.1.6.2 Groundwater

a. Occurrence. Groundwater in the American Bottoms occurs under leaky artesian and shallow water table conditions. Leaky artesian conditions exist at places where fine-grained alluvium, consisting of silt and clay with some fine sand that impedes or retards the vertical movement of water, overlies coarser alluvium and valley-train deposits; water in these deposits is under artesian pressure. Under leaky artesian conditions, water levels in wells rise above the top of the valley-train and coarse alluvium deposits to stages within the finer grained alluvium. Shallow water table conditions prevail at many places where the fine-grained alluvium is missing and the upper surface of the zone of saturation is in valley-train deposits or the coarser alluvium.

b. Usage. Areas of large groundwater withdrawals are centered in the National City, Monsanto, and Fairmont City areas. Groundwater pumpage in the National City area increased slightly from 14.6 mgd (million gallon per day) in 1966 to 15.0 mgd in 1967, then decreased gradually to 10.3 mgd in 1971. Estimated groundwater withdrawals in the Fairmount City area declined from 3.9 mgd in 1966 to 1.5 mgd in 1971.

c. Projected Development. No significant changes in groundwater level trends are expected in the southern portion of the American Bottoms, including Blue Waters, unless major pumping centers are developed at other than the present sites. Changes in groundwater levels due to pumpage changes at the present pumping centers will affect water levels significantly only in the immediate vicinity of the pumping centers. To

date, no effort has been made in the Bottoms to manage groundwater on a large scale.

2.1.6.3 Future Water Requirements

The need for water within the Blue Waters area is related primarily to industrial use and recreational purposes. Due to the proximity of the Mississippi River and its abundant supply of water, it is highly unlikely that other sources will be tapped in this area in the future for potable water. The need for water from wells for industrial use will be limited to utilization of the extensive groundwater resources and the Mississippi River.

2.1.6.4 Water Quality

Due to the almost complete lack of permanent surface water, the investigation of water quality in the Blue Waters area deals with the quality of surface runoff. When the average observed water quality in the Blue Waters was compared with the appropriate standards of the Environmental Protection Agency of the State of Illinois (Table 1), it was found that the runoff in the Blue Waters drainage area could be used recreationally with the exception that no swimming would be allowed. However, the quality of the impounded water would also be such that it would be conducive to rapid growth of undesirable aquatic vegetation.

2.1.7 CLIMATOLOGICAL ELEMENTS OF THE AMERICAN BOTTOMS

2.1.7.1 General

The climate of the American Bottoms and the Blue Waters area is that of the interior continental type, which is characterized by rapid changes in the weather, large fluctuations in seasonal and even daily temperatures, rather cold winters and warm summers, and has a fairly evenly distributed annual precipitation.

2.1.7.2 Temperature

The average annual temperature is 56 degrees Fahrenheit; the January average is 32 degrees; and the July average is 79 degrees. Severe outbreaks of cold polar air move through the area every winter and produce temperatures as low as minus 10 to minus 15 degrees; these cold waves generally are of short duration with moderate above-freezing weather returning in three or four days. July and August are warm and often humid. When warm high pressure centers stagnate over the region, temperatures may exceed 100 degrees for short periods. The growing season is approximately 200 days, from mid-April to the end of October.

TABLE 1. Assessment of Blue Waters Drainage Water Quality

<u>Parameter</u>	<u>Standard</u>	<u>Guideline</u>	<u>Observed Value Range</u>	<u>Remarks</u>
Chloride, mg/l	500	<170	2.5	Guideline value conducive to good, mixed fish fauna.
Conductivity, μ Mhos	-	150-500	110	Conducive to good, mixed fish fauna.
Alkalinity, mg/l	-	100-120	45	Conducive to good, mixed fish fauna.
Potassium, mg/l	-	<5	4.3	Prevents excessive plankton growth.
Silica, mg/l	-	>0.5	80	Favors growth of diatoms.
Sodium + Potassium, mg/l	-	<85	6.5	Conducive to good, mixed fish fauna.
Copper, mg/l	0.02	<0.02	0.03	Guideline value conducive to good, mixed fish fauna.
Iron, mg/l	1.0	<1.0	5.0	Guideline value conducive to good, mixed fish fauna.
Zinc, mg/l	1.0	<0.5	0.2	Guideline value conducive to good, mixed fish fauna.
pH	6.5-9.0	6.7-8.6	7.5	Guideline value conducive to good, mixed fish fauna.
Fecal Coliform, MPN/100 ml	200	<1,000 (1) <5,000 (2)	4,800	Guideline value safe for swimmers. (1) Value does not interfere with boating. (2)
Dissolved Oxygen, mg/l	6.0	>5.0	8.0	Guideline value conducive to good, mixed fish fauna.
Total Phosphorus, mg/l	0.05	<0.05	0.85	Prevents excessive growth of undesirable algal forms.
Total Nitrogen, mg/l	0.3	<0.3	1.6	Prevents excessive growth of undesirable algal forms.
N:P ratio	-	<20:1	2:1	Prevents excessive growth of undesirable algal forms.
Ammonia-N, mg/l	1.5	<1.5 (1) >5 (2)	0.2	Conducive to good, mixed fish fauna. (1) Inhibits algal growth. (2)
Nitrate-N, mg/l	-	<4.0	0.1	Conducive to good, mixed fish fauna.

a Illinois EPA General Standards adopted March 7, 1972

b "Water Quality Criteria," California Water Quality Control Board,
McKee & Wolf, 1963

c Data base on a one sample effort only

2.1.7.3 Precipitation

The 80-year average precipitation is 35.4 inches, with June the wettest month. Thunderstorms produce much of the summer rain and also are responsible for the usually heavy rains which may result in isolated flooding at times. Snow may occur in any or all weeks from early November through April; the average annual snowfall is approximately 17 inches.

2.1.8 AIR QUALITY

Air pollution is a significant aspect of the environment throughout the American Bottoms and Blue Waters area. This discussion of air pollution is limited to the Blue Waters segment of the American Bottoms because of the complexity of the problem and lack of data for the northern portion of the area.

The location of Blue Waters is such that large variations of air pollution are experienced from day to day or even hour to hour, depending on wind direction. This susceptibility to wide variation is due to the location of the Blue Waters area with respect to both highly urban-industrial areas (St. Louis and East St. Louis to the west and north, respectively) and open rural countryside (uplands to the east and bottomlands to the south).

The sources which collectively account for a high proportion of air pollution levels in the Blue Waters area are located to the north and west. Several of the Illinois sources are less than a mile from the northwestern boundary of the Blue Waters area. Because of the close proximity of the area to its major sources of pollution, the air pollution levels over the Blue Waters area often exceed the ambient air quality standards established by the Federal Environmental Protection Agency when wind directions are westerly or northerly.

Directly contrasting this high pollution source is the area to the south of the Blue Waters area. This land is mostly open rural country, and there are fewer sources of pollution from the south than from any other direction. There are three quarries immediately south of the southwestern boundary of the Blue Waters area. The sole type of pollution produced from the nearby quarries is particulate pollution, but the particulate levels reaching Blue Waters often exceed suggested Federal maximums when the wind is from the southwest.

A number of pollution sources are situated to the north and east of the Blue Waters area, but these sources are minor compared to the levels of pollution generated by sources to the northwest. The pollution sources to the north and east of the Blue Waters area are few and relatively distant, and the effect of these easterly sources are not significant.

2.2 BIOLOGICAL ELEMENTS

2.2.1 INTRODUCTION

Man has had a significant impact on the American Bottoms for over 1,700 years. It is certain that aboriginal cultures utilized the existing biological communities, at times perhaps clearing much of the existing forest. However, with the exception of several large mounds, their mark is not easily discernable, and the conditions encountered by the first white settlers probably appeared free from man's influence.

Agricultural and urban development over the past 200 years has left little that can be identified as "natural environment." Prairies have been plowed, forests cut, and lakes and marshes drained. Reduction in the extent and diversity of vegetative habitats has promoted a considerable reduction in the number and abundance of animal species. The species that are now common in the area are those that can adapt to man's modification of the natural environment. A few introduced species and native species which thrive in modified habitats are quite common, but the majority, requiring more stable and diverse habitats, have been reduced in number. The present biological communities in the American Bottoms are described below. Forest cover and habitat type for the Blue Waters area are shown on Plates 9 and 10.

2.2.2 BIOLOGICAL COMMUNITIES

2.2.2.1 Original Communities

The biotic communities encountered by early European settlers in the American Bottoms were probably: (1) stream margin forest of eastern cottonwood and black willow; (2) bottomland mixed deciduous forest characterized by pin oak, American elm, eastern cottonwood, silver maple, and American ash; (3) bottomland prairie (in reality a marsh community) comprised of marsh elder, slough grass, several species of sedge and smartweeds, and blue vervain; and (4) bottomland lakes with marginal vegetation of American lotus, marsh elder, common arrowhead, and several species of pigweed and smartweed. These communities have been severely reduced in size or altered in composition by agricultural development or by urbanization, since the time of European settlement. Presently, few areas in the Bottoms reflect original communities. In the Blue Waters area, no undisturbed areas are known to exist.

2.2.2.2 Present Habitat Types

For the purpose of this discussion, several habitat types have been defined, and these are discussed below. Although some of these communities are artificial, they do represent identifiable entities with

characteristic species compositions. All described communities are present in the American Bottoms and in the Blue Waters area. With approximate acreages for each community occurring in the Blue Waters area indicated.

2.2.2.3 Urban - 3,680 Acres

Vegetation includes cultivated grasses, shrubs and trees, in addition to volunteer species of trees and shrubs left to blend with the landscape. Faunistic components vary with the availability of specific food and cover species, but commonly include the cottontail rabbit, gray squirrel, house mouse, and Norway rat. Raccoon, opossum and several species of bats are common in some urban settings. Common urban birds include the starling, cardinal, grackle, house sparrow, robin, bluejay, mockingbird, and domestic pigeon. If suitable food and cover is available, a variety of other bird species may be found in the urban community.

2.2.2.4 Agricultural - 3,430 Acres

Fields and orchards are intensely managed with the purpose of removing competing vegetation, and, consequently, greatly reducing the utilization of these areas by animals. However, cultivated crops are a food source and do attract a wide variety of vertebrates and invertebrates. Particularly obvious during the fall and winter seasons are flocks of redwings, grackles, and starlings.

2.2.2.5 Old Field - 590 Acres

These areas have been cleared, usually for agricultural purposes, and then abandoned. Vegetative composition is dependent upon the duration of abandonment and the rate of succession. Vegetation in the early stages includes various species of bluestem, wild aster, ragweed, smartweed, cocklebur, and foxtail. Within a few years of abandonment, a shrubbery stage characterized by various species of blackberry, dogwood, elder, and sumac develops. As succession proceeds, hawthorn, mulberry, box elder, American elm, and black cherry become increasingly common. Ultimately, the canopy closes and a hardwood forest develops. The length of time required for succession from an abandoned field to hardwood forest depends on local environmental conditions, ranging from 20 to 40 years. The faunistic component of the old field community depends upon its particular stage of succession; however, typical species include the cottontail rabbit, raccoon, opossum, striped skunk, white-footed mouse, bobwhite quail, mourning dove, starling, grackle, crow, and a variety of songbirds. This is a fairly important habitat type in the American Bottoms and the Blue Waters area. In the Blue Waters area, old field communities are most commonly found on urban vacant lots, on idle industrial land, and on narrow strips bordering agricultural land.

2.2.2.6 Bottomland Forest - 80 Acres

The bottomland forests are characterized by mixtures of deciduous trees, the species composition being primarily determined by soil and drainage characteristics. These are primarily cottonwood-black willow-American elm associations, with mixtures of pin oak, honey-locust, silver maple, American ash, blackcherry, and hackberry. Water stands in these woods during wet seasons. Flocks of starlings, redwings, and grackles roost here in the fall and winter and the areas support a large number of other bird species. The gray squirrel, white-footed mouse, raccoon, opossum, and cottontail are common mammals in these areas. The cricket frog, chorus frog, and American toad utilize the temporary ponds for breeding purposes. Although this habitat type is fairly common in parts of the American Bottoms, it is uncommon in the Blue Waters area and virtually confined to ditch margins and along the borders of agricultural lands.

2.2.2.7 Marshes - 80 Acres

Characteristic marsh vegetation in the American Bottoms includes sedges, smartweeds, bur-weeds, and cattail. The margins of the marshes are often lined with willows, grading into moist woods. All of the marshes are periodically dry and, consequently, support a poor fish fauna. Chorus frogs, cricket frogs, American toads, garter snakes, and northern water snakes are common herptiles in this habitat type. The great blue heron, cattle egret, common egret, green heron, grackle, starling, and redwing are characteristic birds in the marsh habitat. Muskrats are common in many of the marsh areas. Although marshes have been greatly reduced throughout the American Bottoms by draining and filling, they are still in evidence in the northern portion of the American Bottoms. Marsh habitat in the Blue Waters area is extremely limited.

2.2.2.8 Ponds and Lakes - Negligible Acreage

There are several lakes in the American Bottoms, the major ones being Horseshoe Lake and three recreational lakes in Frank Holten State Park. In the Blue Waters area, there is a small (one-acre) lake currently under development for recreational purposes. All of the larger lakes have siltation problems and are generally quite shallow. Willow, cattail, and American lotus are common along the shoreline and in shallow water. Despite silt problems, many of the lakes are heavily fished, and major fish species are bluegill, buffalo, carp, carpsuckers, and black bullhead. Bullfrogs, leopard, cricket, and chorus frogs, garter snakes, northern water snakes, painted turtles, and snapping turtles are common herptiles in the lake area. The great blue heron, green heron, and common egret and redwing are commonly observed in these areas. Muskrat are found in the lake habitats, and their dens are common in shallow water areas. There are a number of borrow pits throughout the Bottoms, but none of these are managed, and apparently have very poor fish populations. There is generally no public access to these areas.

2.2.2.9 Ditches - 420 Acres

Drainage ditches in the American Bottoms and the Blue Waters area are lined by smartweeds and arrowheads, and patches of creeping primrose occasionally cover the water surface. The ditch water is apparently low in planktonic forms. The ditches are characterized by a shifting mud bottom, and provide little suitable bottom habitat. Typical bottom fauna includes Tendipedid larvae and various Tubificid worms. Fish species found in the ditches include the gizzard shad, carp, green sunfish, emerald shiner, and red shiner. Frogs, turtles, and snakes, although present, are not common.

2.2.2.10 Ditch Margin - Negligible Acreage

The slopes adjacent to ditches provide a definable habitat type. The nature of the ditch margin community is dependent upon soil moisture and maintenance. Where mowing maintenance occurs on a regular (at least annual) basis, grasses are the dominant vegetation, augmented by sedges, ragweeds, smartweeds, composites, tree seedlings, and blackberries. In non-mowed areas, succession produces an eastern cottonwood-black willow community, and eventually an admixture common to mature bottomland forests. The ditch margin community occurs throughout the American Bottoms, and its faunistic composition is similar to that found in old fields.

2.2.3 SPORT FISH AND WILDLIFE

2.2.3.1 Fishing

There is a strong fishing tradition among the residents of the American Bottoms, even though the fisheries resource is presently unimpressive. The large lakes receive heavy fishing pressure, usually without encouraging results. The primary sport fish are the hard core remnants of a formerly diverse fisheries: primarily bluegill, carp, buffalo, and black bullhead. Fishing in drainage ditches reaches a peak when flood waters enter the ditch systems from the Mississippi River.

The area supports five fee fishing areas. This, plus the fishing pressure received at public lakes and drainage ditches strongly indicates the need for more and improved facilities. The primary detriment to fish populations in the larger lakes is siltation. Limiting factors in drainage ditches include rapidly changing water levels and flow rates, and instability of the ditch bottom. The fishing resource in the Blue Waters area is extremely limited, and includes only drainage ditches and a one-acre lake (Lily Lake) which is currently under construction.

2.2.3.2 Hunting

Much of the American Bottoms remains in agricultural or semi-developed condition, and northern portions of the area contain marsh, old

field, and woodland habitats which are productive wildlife areas. By contrast, very little valuable wildlife habitat remains in the Blue Waters area.

Recreational hunting and commercial trapping still occur in the Bottoms. The bullfrog, various species of ducks and geese, bobwhite quail, mourning dove, raccoon, gray squirrel, fox squirrel, cottontail rabbit, and whitetail deer are hunted in the area, with the greatest emphasis being placed on the cottontail rabbit and bobwhite quail. Raccoon, muskrat, and opossum are most commonly trapped. Nonconsumptive wildlife utilization occurs throughout the Bottoms. This may range from active wildlife observation, such as bird watching or nature photography, to passive or accidental enjoyment of the wildlife resource.

There is little or no hunting or trapping in the Blue Waters area because of a lack of desirable wildlife species and relatively little land available for hunting. Nonconsumptive wildlife utilization does occur, and although habitat to support a great number of species is extremely limited in the area, wildlife observation in urban areas is a source of pleasure for some.

2.2.3.3 Endangered Species

The American Bottoms is not known to contain critical habitat for any species considered threatened or endangered nationally. (Fish and Wildlife Service, 1974). However, it is possible that two species, the peregrine falcon and the southern bald eagle, occasionally stray into the area. Also, Indiana bats and grey bats could possibly feed in the area. The Illinois Department of Conservation (1978) has prepared a list of species considered rare in Illinois. Most of these species are birds which occur in the area only during migration. Those species from the National and State lists that are likely to occur in the area are listed in Section 4 in Table 9 that summarizes the project impacts on them. No species on the National list depends upon habitats in the American Bottoms for survival. It is noted, however, that most endangered species are in difficulty because of the loss of habitat, and, consequently, all remaining habitats for endangered species must be considered important. A heron rockery that is the last known rockery in Illinois used by the Snowy Egret and Little Blue Heron is located north of the Blue Waters Ditch Area.

2.2.4 PEST SPECIES

2.2.4.1 Insects

Mosquitoes of primary importance to man in the American Bottoms belong to the genera Culex, Anopheles, and Aedes. Aedes vexans is perhaps the major problem species because of the frequency of which it bites man. It is not, however, an important disease vector. Culex

pipiens is the vector for St. Louis encephalitis. Major outbreaks of this disease occurred in the St. Louis area in 1933, 1937, and 1966. Malaria, transmitted by Anopheles mosquitoes, was last reported locally in 1951.

Although the breeding requirements of these species differ, each depends upon the availability of standing water. Anopheles mosquitoes are found in clear permanent water. Flood waters, wet woods, marches, and drainage ditches provide appropriate breeding habitat for Culex and Aedes mosquitoes. Suitable breeding habitat for all of these genera may be found throughout the American Bottoms. Although drainage and mosquito control efforts have significantly reduced the mosquito populations in the Bottoms, a potential problem remains because of periodic flooding and the presence of standing water.

2.2.4.2 Arachnids

Two tick-vectored diseases, tularemia and Rocky Mountain spotted fever are known from this area, although incidences of these diseases in the region are extremely uncommon. Dermacentor variabilis is the only tick species in the area which commonly bites man. This species is associated with brushy areas along watercourses.

Chiggers (several species of Eutrombicula) are found throughout the Bottoms, tending to be more common in damp brushy areas bordering woods. Their abundance is locally spotty and not easily predictable. The bite produces an irritating itch.

The brown recluse spider may be found in older buildings throughout the American Bottoms. Its bite produces a necrotic wound which may be especially harmful to young children. Bites are relatively rare.

2.2.4.3 Rodents

The Norway rat and house mouse are common mammals inadvertently introduced from Europe. Although they are found in virtually all terrestrial habitats in the American Bottoms, they are most characteristic of urban or agricultural areas where unsanitary conditions provide adequate food and cover.

House mice and Norway rats are extremely destructive animals, damaging human food and property, and presenting an ever-present potential reservoir for a variety of human diseases. Their presence in residential surroundings is psychologically disturbing to many persons.

2.3 SOCIO-CULTURAL ENVIRONMENT

2.3.1 INTRODUCTION

The primary characteristics of the present-day environment in the Blue Waters area have been generated by the presence of a large and active human population. The original physical environment of the area has been altered to fit the needs and/or desires of this increasingly urban population. In the chapters below, the historical development of the socio-cultural environment of the Blue Waters area is discussed and current characteristics of the social area are presented.

2.3.2 HISTORICAL SOCIO-CULTURAL DEVELOPMENT

2.3.2.1 American Bottoms

While human settlement has been present in the American Bottoms for at least 10,000 years, significant impacts on the area have occurred only during the last 1,700 years.

a. Aborigines. Beginning around 300 A.D., people of the Woodland Culture utilized sites along the bluff crests and on terraces in the Bottoms near large permanent bodies of water. During the Mississippian period from 900 A.D. to 1250 A.D., the Bottoms contained a population in the neighborhood of 40,000 at the Cahokia Mounds. Beginning around 1250 A.D. the power and influence of the Cahokia complex declined rapidly. The decline was so great that when Marquette and Joliet came into the area some 400 years later, they were apparently unaware of the existence of the Mounds or their creators.

b. European. In 1699, the French located the mission of the Holy Family at the site of present-day Cahokia, establishing what has become the oldest continuously inhabited European settlement in the Mississippi Valley. The decisions and actions of the French exerted great influence on the character of the area. Even today, the arrangement of farms, subdivisions, and roads reflect to some degree the French land survey system of long lots, commons, and towns.

c. American. The British took legal control of the area in 1763 for a brief period. On July 6, 1778, George Rogers Clark occupied the Village of Cahokia for the United States and the period of American settlement began. Cahokia became an administrative center for both Illinois and St. Clair County. In 1814, however, the county seat was moved to Belleville and Cahokia lost its position of importance.

Farmers settling in the area following the War of 1812 found a ready market for their agricultural goods in the growing City of St. Louis across the Mississippi River. In order to transport goods from the Bottoms to St. Louis, a ferry run was established. In 1817, Illinoistown, the settlement at the Illinois end of the ferry was laid out. In 1837 a railroad was built across the Bottoms from the bluffs to Illinoistown to transport coal and within the next 20 years three major railroads entered

Illinoistown. In 1861, Illinoistown and the newly platted town of East St. Louis merged with the product of this merger assuming the name of East St. Louis.

Economic development of the entire Bottoms area began in earnest after the Civil War. In 1867, construction started on the first bridge across the Mississippi River, and seven years later Eads Bridge connected Missouri and Illinois with a road and rail routeway. East St. Louis became a major rail center. Manufacturing within the American Bottoms grew at such a rapid rate that by the beginning of the 1920's, the area was one of the major manufacturing areas within the State of Illinois.

This expansion of the area's economic base was reflected in population increases and in increases in the size of the urbanized areas. In the period from 1874 to 1909, the area platted out for urban development tripled in size. In East St. Louis alone, the population increased from some 15,000 in 1890 to over 71,000 in 1920.

2.3.2.2 Blue Waters Area

While the French settled early in the Blue Waters area, the development of this land occurred in two steps, both of which are rather recent. In the early 1900's, a major levee was built along Prairie du Pont Creek and Blue Waters Ditch to drain Cahokia Lake, and Goose Lake Ditch was built to drain Goose Lake, decreasing the possibility of flooding from the river and increasing the amount of land available for agriculture.

The second major change was the urbanization of the Blue Waters area. Even though the first European settlement in the St. Louis Region was at Cahokia; the Blue Waters area did not become an area in which urban uses predominated until after World War II. Up to this time, the urban areas were the small Village of Cahokia, a linear urban pattern along Bond Avenue in East St. Louis, Alorton and Centreville, and some scattered subdivisions. In the fifteen years between 1945 and 1960, the urbanization of the area was rapid and extensive. Agricultural areas, as a result, were reduced in size. Today urban areas comprise 55 percent of the area, and agricultural and vacant areas 45 percent.

2.3.3 SOCIO-CULTURAL CHARACTERISTICS

2.3.3.1 Demography

a. Population. Presently, more than 300,000 people reside on the American Bottoms. This population is part of the St. Louis metropolitan area and is increasing. For example, the population of St. Clair County, much of which is encompassed by the American Bottoms, has grown at an average annual rate of 1.9 percent from 1950 to 1970. Similarly the population of the Blue Waters area has steadily increased over the years as

the once agricultural character of the area has been changed to more urban uses.

The Blue Waters area, located in St. Clair County, is currently the place of residence for more than 31,000 people, and totally or partially encompasses several communities. These communities are Alorton, Cahokia, Centreville, East St. Louis, and Sauget. Cahokia is partially contained within the Blue Waters area, and more than two-thirds of Centreville and Alorton lie within the area. Only small portions of East St. Louis and Sauget are within the area's boundaries. Table 2 below presents population figures for the major communities in the Blue Waters area.

Table 2. Population of St. Clair County and Blue Waters Area Communities 1950-1970

Place	<u>Population</u>		
	1950	1960	1970
St. Clair County	205,995	262,509	285,176
Alorton	2,547	3,282	3,573
Cahokia	794	15,829	20,649
Centreville	-	12,769	11,378
Sauget	-	-	273

Source: U. S. Census of Population, 1960, 1970.

Population projections made by the Southwest Illinois Metropolitan Area Planning Commission indicate that St. Clair County's population will continue to increase to approximately one-half million by 2010. Available data on the Blue Waters area suggest that the population of this area has plateaued and only small increases in population can be expected unless more land becomes available for development.

In the following discussion, census data will frequently be used to illustrate characteristics of the population in the Blue Waters area. It is important to note that the boundaries of census tracts in which the Blue Waters area is contained do not conform exactly with the boundaries of the Blue Waters study area. Therefore, census data as presented may not provide a completely accurate picture of the Blue Waters area. However, as illustrated in Plate 11, the "fit" between census tracts and the study area is close enough to provide confidence in the reliability of census data in describing the study area.

b. Racial and Residential Patterns. The American Bottoms is characterized by the presence of an older central city whose population is largely black, surrounded by largely white more affluent suburban areas.

East St. Louis, the central city, has a population 69 percent black. In contrast, the population of St. Clair County less East St. Louis is almost 93 percent white.

To a great extent the pattern noted above holds true for the Blue Waters area as well. Those areas contiguous to East St. Louis, Centreville, and Alorton, display many of the characteristics of the center city, while Cahokia lying to the south is a more affluent practically all-white suburban area.

The line formed by the Illinois Central Railroad tracks marks the existence of a social boundary between the two racial communities that make up the Blue Waters area. Plate 12 provides graphic illustration of the difference in racial composition between the two areas. For purposes of discussion, those census tracks in the East St. Louis, Centreville and Alorton portion of the Blue Waters area will be referred to as the Centreville area, while those census tracks in which Cahokia and Sauget are located will be referred to as the Cahokia area.

c. Age Structure. The Blue Waters area is characterized by a youthful population; almost 50 percent of the population is under 20 years of age. Table 3 shows the overall age distribution of the Blue Waters area in comparison to St. Clair County and the St. Louis Standard Metropolitan Statistical Area (SMSA).

Table 3. Age Distribution of Blue Waters Area, St. Clair County and the St. Louis SMSA by Percent

<u>Ages</u>	<u>Blue Waters Area</u>	<u>St. Clair County</u>	<u>St. Louis SMSA</u>
65+	4.2	9.1	9.8
55-64	6.1	8.9	9.3
35-54	23.8	23.0	23.2
20-34	17.8	18.1	19.2
10-19	25.1	21.1	19.8
0-9	22.8	19.8	18.7

Source: U. S. Census of Population, 1970.

d. Employment Patterns. To a great extent, the influence of nearby heavy industry is reflected in occupational figures for the Blue Waters area. Table 4 presents comparisons of occupational groupings for St. Clair County, the Blue Waters area, and the St. Louis SMSA.

Table 4. Workers by Occupational Category by Percent 1970

<u>Occupational Category</u>	<u>St. Clair County</u>	<u>Blue Waters</u>	<u>St. Louis SMSA Area</u>
Manufacturing	24.1	33.1	28.8
Wholesale-Retail			
Trade	20.4	22.0	21.2
Services	7.0	12.0	7.1
Educational Services	6.9	5.5	7.2
Construction	5.2	4.4	5.0
Government	15.8	5.3	13.4
Craftsmen- Foreman	14.8	17.7	14.0
White Collar	44.9	39.9	50.7

Source: U. S. Census of Population, 1970.

As can be seen from Table 4, the Blue Waters area has proportionately more of its population engaged in manufacturing occupations, as well as in wholesale and retail trade, and in service occupations than for the St. Louis SMSA or for St. Clair County as a whole. A higher proportion of Blue Waters residents occupy craftsmen and foremen positions than other residents of St. Clair County or the SMSA. Blue Waters residents are proportionately under-represented in educational, construction, and governmental occupations in comparison with St. Clair County and the SMSA.

There are substantial differences between the Centreville and Cahokia areas in terms of unemployment. At the time census figures were recorded, 14.3 percent of males over 16 years of age in Centreville were unemployed, while in Cahokia the figure was 4.4 percent. These figures compare to unemployment rates of 6.1 percent and 3.7 percent for St. Clair County and the State of Illinois, respectively.

e. Income. Median family income in Cahokia is over \$10,500 per year; while for Centreville area census tracts, median family income ranges from \$4,032 to \$6,805. These figures compare to \$9,540 and \$10,957 per year for St. Clair County and the State of Illinois, respectively. Over one-quarter of the families in the Centreville area have incomes below the poverty level; while in the Cahokia community, the figure is nowhere higher than 5 percent.

2.3.3.2 Housing

Housing in the Blue Waters area consists primarily of single-family detached residences. In the Cahokia area most of the houses were built during the mid-1950's in response to the post-war housing shortage.

As a result of the seller's market of that time, many of these homes and the subdivisions that contain them are located in poorly drained areas (Figure 1 is illustrative of much of the housing in Cahokia). The median value of a single-family residence in Cahokia is approximately \$11,500, and ranks slightly below the median value of \$12,970 for St. Clair County and substantially below the \$19,916 figure for Illinois. Houses in the Centreville area are generally older, wood-frame structures in poorer repair and worth less than homes in the Cahokia community (Figure 2). Median value of single-family residences ranges from \$6,100 to \$8,400 in the census tracts containing the Centreville community.

In general, residential construction in the Blue Waters area in recent years has not kept pace with housing construction in the St. Louis metropolitan area. Of the total stock of housing in Blue Waters, only 15 percent was constructed during 1960-1970 decade. In contrast, 25 percent of the housing stock of the St. Louis Standard Metropolitan Statistical Area was built in this decade. Table 5 summarizes the housing construction patterns that have been discussed.

Table 5. All Housing Units; Year Structure Built by Percent

<u>Decade</u>	<u>St. Louis Standard Metro- politan Statistical Area</u>	<u>Blue Waters</u>
1960-1970	25.6	14.7
...1965-1970	12.7	7.0
1950-1959	27.5	51.8
1949 or before	27.0	29.9

Source: U. S. Census of Housing, 1970.

2.3.3.3 Education

Residents of Blue Waters have a somewhat lower educational status on the average than their neighbors in the remainder of St. Clair County or in comparison with the State of Illinois as a whole. Of residents 25 years of age and older in St. Clair County and the State of Illinois, 42.6 percent and 52.6 percent, respectively, are high school graduates. In comparison, 37.1 percent of Blue Waters area residents 25 or older are high school graduates.

All of the Cahokia area and two-thirds of the Centreville area is served by the United School District Number 187. This district currently has 7,822 pupils and 376 teachers. Due to a declining birth rate in the area, the district has been experiencing an annual drop in enrollment of 200 pupils for the past several years; however, administrators expect enrollment to stabilize at or near present levels. The district high school now operates on a split shift system to alleviate overcrowding conditions. Future plans for expansion include an open space secondary school and additional physical education facilities.

2.3.3.4 Crime Patterns

Four major law enforcement agencies serve the Blue Waters area. Two agencies, the Cahokia and the Centreville Police Departments, provide protection for practically the entire Blue Waters area, while the other two agencies, the Sauget and Alorton Police Departments, patrol small portions of the study area. The following analyses will be primarily concerned with Cahokia and Centreville data.

In general, as Figure 3 suggests, Cahokia and Centreville have roughly similar overall patterns of criminal activity. There are differences in the types of criminal activity between the area however. The majority of crimes in Cahokia are against property, principally burglary and larceny. In Centreville, burglary is also the most frequently occurring crime; however, assault, a violent crime, is the second most frequently occurring crime. Though Cahokia's aggregate crime rate is 37.48 crimes per thousand, while Centreville's aggregate crime rate is 20.81 per thousand, violent crimes constitute 3.1 percent of the Cahokia aggregate, whereas they make up 24.4 percent of the Centreville rate.

Both Cahokia and Centreville rank above the national average for burglaries. Conversely, both communities rank below national figures for the violent crimes of robbery and rape. Centreville, with .08 incidences of homicide and 4.30 assaults per thousand population ranks above the national average of .05 homicides, and 1.76 assaults per thousand population. In Cahokia, the homicide rate of 0.0 and assault rate of .77 per thousand population rank it considerably below both Centreville and national figures.

Crime rates in the other two communities adjoining Blue Waters - Sauget and Alorton - are high, however for different reasons. Sauget, a heavily industrialized area, has a resident population of 273, but has a worker population of several thousand. Hence, when incidence of crime reflective of a large worker population is computed on the basis of residents population, the results are rather misleading.

In Alorton, however, crime statistics reflect genuinely high levels of criminal activity in the community. According to figures provided by the Community Law Enforcement Agency, crime rates in Alorton exceed the national average in each of the seven major categories of criminal activity.

2.3.3.5 Health

In general, the Blue Waters area is not characterized by the presence of any unique health problems. However, the Blue Waters area and

St. Clair County as a whole is of interest because the area possesses an annual rate of infectious hepatitis that is at least twice the national average. These figures, as reported by the Illinois Department of Public Health may point to an important health problem in the Blue Waters area.

2.3.4 EXISTING LAND USE

The Blue Waters area is a well populated region which borders a major metropolitan area, St. Louis, Missouri. Because it is on the urban fringe, the Blue Waters area holds an inter-mixture of urban and agricultural activities (see Plate 13 and Figures 4-9). Of the 8,360 acres in the Blue Waters area, the existing land use may be categorized as: Agricultural 36 percent; residential 26 percent; transportation 16 percent; vacant 9.5 percent; and industrial 9.0 percent. Residential development is concentrated in the communities of Centreville and Alorton in the northwest, and Cahokia in the southwest. Scattered residential development, however, may be found throughout the area. Most of the land used for transportation is located at Bi-State Airport on the northern edge of Cahokia and the rail yards along the southern edge of Centreville. The two transportation concentrations are physically separated by a large predominantly agricultural area. Urban sprawl has produced a melange of urban and agricultural land uses, lacking precise boundaries between the land use zones. The absence of regulative land use controls and the attractive profits realized from the sale of farm lands for residential development have determined such a pattern.

By using an adaptation of the location quotient, the idea of Blue Waters area being a composite of both urban and agricultural functions is reinforced. The area possesses neither urban nor agricultural activities to such an extent as to be classified truly urban or agricultural (Table 6). Also, transportation facilities show as being the leading land use type throughout. The area's relatively low proportion of vacant land, especially in comparison to St. Clair County and the St. Louis region, would seem to indicate that the land has few limitations and/or that economic pressure is great enough to overcome these limitations where they do exist. Finally, if the amount of recreational resources is examined, the deficiency ranges from 3 percent to 26 percent of the desired standard of development levels.

2.3.5 AGRICULTURE

2.3.5.1 Introduction

Agriculture in East St. Louis and vicinity is a fundamental aspect of the environment, representing in excess of 25 percent of the total land use. However, its role in this environment may be diminishing.

Table 6 (Cont'd)

	Total Area 435,321	Residential 32,844	Commercial 2,917	Industrial 4,516	Public 4,721	Recreation 4,500	Transportation 3,315	Extractive 11,213	Vacant 56,156	Agriculture 314,771
St. Clair County (Acres)										
Percent of Total	100.0	7.5	0.7	1.0	1.1	1.0	.8	3.0	12.9	72.0
Blue Waters as Percent of St. Clair County	1.9	6.6	5.7	16.6	3.0 ¹	.5	39.5	0	1.4	.9
Location Quotient BW/St. Clair County	—	3.47	3.0	8.74	1.59	.26	20.79	0	.74	.50

1. Obtained by subtracting agricultural land from amount termed "open"
 2. Estimated from interviews and aerialphotos
 3. St. Louis Region consists of St. Louis, Missouri Counties of St. Charles, Franklin, and Jefferson, and Illinois Counties of St. Clair, Madison, and Monroe
 4. Obtained by subtracting agricultural land from amount vacant given
 5. Sum of individual counties in St. Louis Region Cited from census of Agriculture, 1969, Area Reports
 6. Blue Waters Area Land Use Type
St. Louis Region Land Use Type

Table 6. Location Quotient Land Uses, Blue Waters Area

	Total Area	Residential	Commercial	Industrial	Public	Recreation	Transportation	Extractive	Vacant	Agriculture
Blue Waters Area (Acres)	8360	2,174	167	752	143	24	1310	0	790 ¹	3,000 ²
Percent of Total	100	26	2.0	9.0	1.7	.3	15.7	0	9.5 ⁴	35.8 5
St. Louis ³ Region (Acres)	2,914,032	248,412	21,557	28,985	39,955	45,211	9,833	14,247	714,991	1,790,840
Percent of Total	100	8.5	.7	1.0	1.4	1.6	0.3	0.5	24.5	61.5
Blue Waters ⁶ as Per cent of St. Louis Region	.29	.88	.77	2.6	.36	.05	13.3	0	.11	.17
Location Quotient BW/St.L.R.	—	3.03	2.65	8.96	1.24	.17	45.86	0	.38	.59
St. Louis City (Acres)	40,075	20,239	2,971	7,125	3,695	3,023	1,041	0	1,982	0
Percent of Total	100	50.5	7.4	17.8	9.2	7.5	2.6	0	5.0	0
Blue Waters As Percent of St. Louis City	20.9	10.7	5.6	10.5	3.9	.79	125.8	0	39.9	0
Location Quotient BW/St. Louis City	—	.51	.27	.51	.19	.03	6.02	0	1.91	0

In the past century, East St. Louis and vicinity has changed from a predominantly agricultural environment to one which possesses varying degrees of urban and agricultural land use. The urban centers of Belleville, Collinsville, East St. Louis and Cahokia, which provided markets and services to the farmers in the 1880's, today pose threats to the existence of agriculture. The mid-sized cities and towns in the area now furnish sources of vandalism and pollution to agricultural activities as well as displacing it. The threat of displacement comes from the fact that while the land represents an essential resource of the farmer, much of it is located on the urban periphery, thus providing the city with the ability to grow; an asset of considerable value for metropolitan development.

The Blue Waters area, like many other such areas which border a major metropolitan area, has an intermixture of agricultural and urban land uses. Historically agricultural, the area experienced major transformation in the 1950's when the Village of Cahokia boomed and pronounced urban growth was initiated, absorbing much agricultural land. Today, as is characteristic of rural/urban fringe, there is no defined interface between land use zones in the area, but rather a melange of uses. Finally, the importance of agriculture is underscored by the fact that approximately one-third of the land use in Blue Waters is agricultural.

To better determine the character of agriculture in the Blue Waters area, a field survey of the farms and interviews with 13 farm operators, representing approximately 80 percent of agricultural land use in the study area, were conducted.

2.3.5.2 Farm Operators

Although most farmers in the study area are tenant farmers, they are products of a strong agricultural heritage based in the Blue Waters area. With this occupational heritage of "farming life" comes a strong sense of individuality and independence, due to the nature of their self-supporting occupation. Also in the traditional vein, most farmers occupied residences adjacent to their farm buildings, though some residences were removed from the operational center of the farm. The farmers tend to be either relatively young, or old and near retirement age. Age seemed to determine responses to the idea of relocation. The younger operators indicate a greater acceptance of relocation in other farming areas such as central Missouri and southern Illinois, should their land be sold by the owner for urban development. The older farmers express an intention to remain in the area even in the event of farm loss. Each farmer feels that even under present conditions, by 1985 the entire area will be urbanized, the process being quickened by such proposed projects as Illinois Interstate 255 and the Columbia-Waterloo Airport.

2.3.5.3 Land Tenancy

One of the major characteristics of the agricultural activity in the Blue Waters area is the high proportion of land tenancy, as opposed to land ownership. Of the approximate 3,000 acres farmed, 94 percent is leased from owners, a figure which is greatly in excess of the 25 percent tenancy rate for the entire St. Clair County in 1969 (Figure 10). This high rate of tenancy is a determining factor in the continuation of agriculture in the area. In the urban land conversion process, the owner is reimbursed for the land the developer purchases and both benefit. The third party, the land-leasing farmer, has little control over the future of his operation and stands to suffer not only the loss of his livelihood, but a substantial investment in equipment and buildings. Eventually, the process will culminate when the land which a farmer leaseholds is reduced to a level at which the profit from production is insufficient to warrant continuation of the farming operation.

2.3.5.4 Farm Operation

With the extremely high proportion of land tenancy and the prospect of land loss, it is expected that major improvements, investments, and new construction would be minimal. This expected reaction has not occurred in this area, and 50 percent of the farm operators have constructed new buildings in recent years, with the majority being machine storage facilities. Also, approximately 60 percent of the farm operators have purchased some major pieces of equipment such as trucks, tractors, combines, and tillagers in the last five years.

2.3.5.5 Crops and Land Use

Field crops account for 93 percent of the land use of the farmland, the remaining 7 percent in farmsteads, buildings, and roads. A notable exclusion in land use is pastureland for grazing. Such livestock activities, though important in St. Clair County agriculture, are totally lacking in the Blue Waters area. This is due to the fact that the bottomland soil is a good tillable soil, and thus will support the more valuable cash grain crops rather than using the land for the less efficient livestock grazing. On their croplands, farmers produce soybeans, wheat, field corn, and a limited amount of truck crops. This crop pattern is not that of pre-urbanization times, when the area produced sweet corn, cabbage, tomatoes, horseradish, corn, and wheat on relatively small farms. Since that time, technological changes have altered the sources of most of the nation's fresh produce. Farmers have found that it is cheaper and more expedient to ship produce from areas with longer growing seasons and longer annual periods of supply potential.

Because of these technological changes, economic necessity forced the adoption of new crop types and thus conversion to a grain economy. The total acreage by crop breaks down to: soybeans 45 percent; wheat 26 percent; and field corn 20 percent. The remaining 9 percent is in divested acres and truck crops (Figure 11). To give these figures relevance, the 1969 Census of Agriculture statistics for St. Clair County and Illinois are presented, but due to the difference in time frames, direct comparisons cannot be strongly drawn. In 1969, St. Clair County crop breakdowns were: soybeans 40 percent; wheat 21 percent; and field corn 31 percent. For the State of Illinois, soybeans were 30 percent of the total harvested acres; wheat 6 percent; and field corn 50 percent. The county, as well as the Blue Waters area, both concentrate in soybeans, but directly contrast the Illinois emphasis on field corn.

Average crop yields in the Blue Waters area are relatively high, with field corn 125 bushels/acre; wheat 50 bushels/acre; and soybeans 40 bushels/acre (Figure 12). Yield averages for the nearby uplands are not as high, having corn 110 bushels/acre and soybeans 30 bushels/acre. Wheat has better yields on the uplands, averaging about 60 bushels/acre. Again, to give relevance to these figures, 1969 statistics for St. Clair County and Illinois are presented. Keeping in mind the differences in the time, the productivity for the Blue Waters area in 1972 surpasses that for both St. Clair County and Illinois in 1969. This idea of fertility is reinforced by both the feeling of area farmers who prefer to farm the Blue Waters area than the nearby uplands and that farming persists despite significant problems.

2.3.5.6 Problems

The problems which confront the farmer in this rural/urban area center around the conflict between the two interests. The major problem for the farmers in the Blue Waters area is the scattering of farm fields. This scattering is due to uncontrolled urban development which indiscriminately consumed agricultural land. Thus, one farmer may farm fields in as many as seven distinct locations. This feature of the farm operation results in significantly higher production costs and, coupled with the basic rural/urban conflict of interest, is a factor related to other subsequent problems.

a. Transportation Related Problems. Transportation facilities in the study area have removed a large number of acres from agricultural production, presented barriers to farmers moving machinery from field to field, and have restricted the potential for increased production by limiting the use of wider harvesting heads and cultivating equipment.

b. Vandalism. Vandalism is a particularly urban related problem which taxes both the patience and incomes of farmers. The major incidences involve vandalism of machinery and crop losses resulting from

pedestrian and vehicular traffic (motorcycles). In some instances, field crops have been burned, resulting in thousands of dollars of product loss.

c. Miscellaneous Problems. Although high taxes were not considered a major problem, many did note that in certain areas property tax rates were above the level feasible for agricultural land use. Also, farmers generally identified the problem of water drainage as considerable. Because of ponding the soils are often immobilizing, and the drainage problems necessitate an accurate determination of when soils will support farm vehicles.

2.3.5.7 The Future

While urban pressures are exerting an influence upon the agricultural land use, farming operations have proven successful to this date. As more land is converted to urban use, the farm size will obviously decrease to a point at which activity is no longer financially feasible. Thus, small farms should tend to become consolidated under larger and fewer operations. The consensus of the farmers that 1985 is the date at which farming will disappear seems feasible. Additional stimuli to development such as the proposed I-255 and Columbia-Waterloo Airport will quicken the process.

2.3.6 OUTDOOR RECREATION

2.3.6.1 East St. Louis and Vicinity Study Area

The study area is the location of many separate communities. Although separate self-governing bodies, and in many instances very different from one another, a recent study made by the Southwestern Illinois Metropolitan Area Planning Commission (SIMAPC) indicated that these communities share a lack of land devoted to outdoor recreational space. This study utilized standards drawn up by the National Recreation and Park Association. These standards are useful in gauging the effectiveness with which a community is meeting the outdoor recreation needs of its population; however, they are only approximations. Factors such as climate, population characteristics, and local traditions can affect the needs of the community and alter the character of outdoor recreation space requirements. Table 7 summarizes the standards for urban areas. The evidence, as reported by SIMAPC, indicates that outdoor recreation has not been a major factor in the development of the various communities in the East St. Louis and vicinity study area. The evidence also indicates a need for extensive development of various levels of urban park facilities.

Two state-owned regional parks, Cahokia Mounds State Park and Frank Holten State Park, are located in the East St. Louis and vicinity study area. These parks totaling 1,720 acres possess a wide variety of outdoor recreation facilities ranging from playgrounds and ball fields to a golf course and campgrounds.

Table 7. Outdoor Recreation Space Standards

<u>Classification</u>	<u>Acres/1000 People</u>	<u>Size Range</u>	<u>Population Served</u>	<u>Service Area</u>
Playlots	*	2,500 sq.ft. to 1 acre	500-2,500	Sub-neighborhood
Vest pocket parks	*	2,500 sq.ft. to 1 acre	500-2,500	Sub-neighborhood
Neighborhood parks	2.5	Min. 5 acres up to 20 acres	2,000-10,000	1/4-1/2 mile
District parks	2.5	20-100 acres	10,000-100,000	1/2-3 miles
Large urban parks	5.0	100 + acres	One for each 50,000	Within 1/2 hr. driving time
Regional parks	20.0	250 + acres	Serves entire population in smaller communities; should be distributed throughout larger metro areas	Within 1 hr. driving time

* Not applicable

Source: National Recreation and Park Association

2.3.6.2 Outdoor Recreation Space in Blue Waters

As indicated above, there is limited recreational land in the Blue Waters area. Cahokia presently has one acre devoted to public recreation, and 23 acres of private recreational space. Currently Cahokia is developing a 65-acre park that will contain a wide range of recreational facilities. In the Centreville area, neither Alorton nor Centreville possess public or private recreation land.

Based on the above cited standards for outdoor recreation space, the Blue Waters area lacks adequate outdoor recreation facilities. Cahokia with its present population needs an additional 37 acres of park lands to meet the needs of its residents. The above figure was computed including the proposed 65-acre park, but excluding the 23 acres of private recreational space now in Cahokia. In addition to the neighborhood and district park land indicated above, at least nine vest-pocket parks could be justified according to current standards. In Centreville, 28 acres of neighborhood parks, 28 acres of district parks, and five vest-pocket parks are needed. For Alorton, a total of 18 acres of parks are needed.

It should be emphasized that the above space requirements are for the existing population residing in Blue Waters communities. Future population changes will affect space requirements, and as such are important from a recreation planning standpoint.

2.3.7 HISTORICAL RESOURCES

2.3.7.1 Archaeology

The American Bottoms constitutes one of the most significant archaeological areas in the United States. Much of the significance of the area derives from the presence of Cahokia Mounds, the largest single archaeological site in North America. This site is located outside the boundaries of the Blue Waters area; however, as researchers have discovered, the settlement pattern of the Cahokia mounds is analogous to modern patterns of urban, suburban and rural communities. Thus many fringe sites of varying importance are located throughout the American Bottoms, including the Blue Waters area.

Of the archaeological sites that have been identified in the American Bottoms, 24 are located in the Blue Waters area. These sites have been accorded a category of importance, Category I having the most significant sites, while sites in Categories II and III are thought to be less significant. Category IV sites are of unknown importance. Table 8 provides an inventory of the located sites in the Blue Waters area.

Archaeological sites are a non-renewable resource. Once a site is destroyed, it can never be replaced. All sites in the Blue Waters area

Table 8. Archeological Sites in the Blue Waters Area*

<u>Site Number</u>	<u>Category</u>	<u>Description</u>
1	I	Apparently a Mississippian ^{1/} cemetery.
2	I	Site of single component Mississippian farming villages.
3	I	Large Late Woodland village.
4	I	Large Multi-component site with Late Woodland and Early Cahokian occupations.
5	I	Multi-component Late Woodland and Mississippian village or farmstead.
6	I	Small multi-component Late Woodland and Mississippian village or farmstead.
7	II	Small Late Woodland campsite.
8	II	Small Late Woodland camp.
9	II	Small Late Woodland camp.
10	II	Small Mississippian farmstead.
11	II	Late Woodland camp.
12	II	Small Woodland camp.
13	II	Late Woodland camp.
14	III	Transitory campsites, or sites where because of lack of materials functional or temporal significance is unable to be determined.
15	III	"
16	III	"
17	III	"
18	III	"
19	III	"
20	III	"
21	IV	Sites which could not be examined. No data other than location and size is available and significance of sites is unknown.
22	IV	"
23	IV	"
24	IV	"

^{1/} In this table classifications Mississippian and Woodland refer to times of settlement by aboriginal populations. The Woodland, the earlier of the two periods dates from about 1000 B.C. to 900 A.D., and is subdivided into Early and Middle periods of 1000 B.C. to 300 A.D., and Late periods of 300 A.D. to 900 A.D. The Mississippian period dates from about 900 A.D. to 1,500 A.D.

* Due to the fragility of this resource, location of the above sites are not listed in this report. Information on site locations is available at the St. Louis District, Corps of Engineers.

are important from this standpoint. While this does not mean that all sites must be preserved, the significance of the resources must be understood and all important information extracted.

2.3.7.2 Historical Sites

Like archaeological sites, historical sites are fragile, limited, and non-renewable portions of the human environment. In this inventory, three references were consulted in determining sites of historical significance in the Blue Waters area. These authorities are the National Register of Historical Places, the Illinois Historical Survey, and the St. Clair County Historical Survey.

As might be expected considering the early role of Cahokia as an administrative center in Illinois, all of the recognized historical sites in the Blue Waters area are located in Cahokia. Indeed, Cahokia, as the site of longest continuous European settlement in the Mississippi Valley, is one of the most historically significant areas in the Midwest.

The study area has three sites included in the National Register of Historic Places. These sites, the Church of the Holy Family, the Old Cahokia Court House, and the Jarrot House, are discussed briefly below.

a. Church of the Holy Family (Figure 13). This church, probably the oldest west of the Allegheny Mountains, was completed in 1798. The church is located on mission property, which was acquired by the French in 1699. The architectural style is typically pioneer French, of walnut log construction, on a stone foundation.

b. Old Cahokia Court House (Figure 14). This structure, originally a French residence, may be the oldest surviving dwelling in the midwest. It was constructed somewhere between 1735 and 1740. When St. Clair County was formed in 1790, the structure became the county court house. After the county seat was moved to Belleville, in 1814, the court house was sold and became a saloon, storehouse, meeting hall, and then again a residence.

The structure is another prime example of pioneer French architecture. Its stone foundation is almost 2 feet thick; the walls are constructed of vertical (palisade) logs; and the roof is the cantilever type and extends down over the porches. The building has four rooms - a courtroom, jail, and two rooms used as living quarters and office.

c. Jarrot House (Figure 15). This structure may be the oldest existing brick building in Illinois. Construction began in 1798 and was completed in 1806. The building derives its name from its owner, Nicholas Jarrot, a wealthy French merchant-trader. Construction is of red brick

and is of Colonial architecture. Some of the numerous window panes which were imported from France are still in use.

The Illinois Historic Structures Survey has indicated an additional important historical resource in the Blue Waters area. This structure, Pitzman School (Figure 16) is an example of an early twentieth century school.

The historical sites in the National Register are the only remaining tangible reminders of the early French influence in the study area. However, a set of factors that deserve attention are the cultural modifications that this influence has imposed on the landscape. The land tenure system of the early French settlers is still prominent today. Land was laid off in series of long lots extending from the river to the bluff line. Due to the linear, narrow nature of lots, many farmers in the study area who rent land today find themselves with not one landlord, but many. Another prime example of the historical influence on current development is the road network which predates motorized vehicles by many decades. Highway 3, the major highway in Cahokia during the French period, was the major route along the bottoms.

2.3.8 FUTURE SETTING WITHOUT THE PROJECT

In the absence of the proposed project, the Blue Waters area would be expected to remain much as it is today.

The characteristic conflicts associated with agricultural and urban development on a flood plain would slowly increase as the local public sought to solve their own individual problems. These localized efforts would have an increased and uncontrolled impact on the remaining habitat in the Blue Waters area.

3. RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLAN

3.1 PLANNED FUTURE LAND USE IN BLUE WATERS

Because water resource environmental planning is future-oriented, it is important to examine the proposed future land uses and their patterns in the Blue Waters area. Future land uses are addressed in comprehensive development plans and may be determined by both the plans and zoning. Such plans and zoning are usually done in anticipation of future growth and/or problems or to assess and remedy an existing problem. Thus, one gets an idea from the plans, not only what the proposed future land uses are for an area, but also a hint as to anticipated problems and growth. Finally, plans and zoning give an indication as to where the communities see themselves going.

3.2 ZONING

The zoning that has been enacted for the land in the Blue Waters area presents an idea of the area's future. Cahokia proposes to continue its single-family character; while Centreville sees itself becoming more populous due to increased densities. Through the power of county zoning, St. Clair County suggests that there be a large single-family and a major industrial area in the unincorporated open area between Cahokia and Centreville, along with a mixture of uses around Alorton. No conservation zoning exists, though a non-restrictive agricultural zoning does occur in Blue Waters.

3.3 LAND USE PLANS

3.3.1 COMMUNITY PLANS

The individual community plans give a second idea of how the governmental officials see their area in the future. The Cahokia plan suggests that most of the village below density residential, with strip commercial along Routes 157 and 3, medium density residential west and southwest of Bi-State Parks Airport, and limited high density in scattered areas southwest of Bi-State Parks. Major parks are indicated and greenways are proposed along several of the drainage ditches. For Centreville, the plan proposed that most of the city be single-family residential, with heavy industry along the railroad and commercial in the eastern part of the community. Alorton and Sauget are planned through a regional planning agency, Southwest Illinois Metropolitan Area Planning Commission, and thus adhere closely to the regional plans for the area.

3.3.2 REGIONAL PLANS

Two other levels of planning exist for the area, both of which

deal on a general, regional scale. The East-West Gateway Coordinating Council (EWGCC) plan is the most general. Nearly all of the Blue Waters is placed in the "fringe" category, which is largely composed of single-family residences, but which does include other uses. A major recreation area is noted for the southwestern part of Blue Waters and patches of regional industrial land are within the northern sector. (Plate 14).

In the SIMAPC plan, the heavy industrial land and low density residential dominate projected land usage, with heavy industry located in the center of the area and low density residential around it. Two areas of high density residential are planned, one in the northwestern portion of the area and the other in the eastern. The far southwestern corner of the area is proposed for agricultural use. (Plate 15).

3.4 COMPARISON OF PLANS

Comparisons between the community plans and regional plans, and between the separate regional plans bring out contradictions. Contradictions of varying degrees occur in all categories of land use. A comparison of the EWGCC and SIMAPC reveals that the location of the industrial areas is quite different. The suggested industrial area in the EWGCC plan coincides with the low density residential area in Alorton-Centreville on the SIMAPC plan. Also, part of the proposed recreational area in Cahokia appears as commercial in the SIMAPC plan. Finally, the SIMAPC plan proposed heavy industrial use for the large unincorporated tract northeast of Bi-State Parks Airport, while the EWGCC plan suggests some regional industrial development but largely "fringe" for the same tract. In comparing the individual community plans with SIMAPC's regional plan, the contradictions are less severe. The Cahokia plan is similar to that of SIMAPC in terms of uses and general locations, though the specific locations of some land uses, particularly commercial and high density residential, do differ. For the Centreville plan, the commercial pattern is similar to that of SIMAPC, but the industrial and light residentials are not.

4. ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

4.1 IMPACT ON PHYSICAL ASPECTS OF THE ENVIRONMENT

4.1.1 IMPACT OF CONSTRUCTION

Construction and earthmoving operations, concentrated in the area of the proposed project would be a source of noise, vibration, and dust for approximately two years, although this activity would be diffused among the various ditches. These operations would disturb some normal pursuits of persons in the vicinity, especially along the channels. The noise and visual impact of construction may be of considerable short-term detriment to the tranquility of residential neighborhoods and may exert psychological hardship on those persons unable to temporarily relocate away from the construction area.

Widening the channels and mounding the earthwork along the channel sides would result temporarily in increased erosion. The sediment load of the ditches will be temporarily increased during construction.

Environmental protection provisions now incorporated in Corps of Engineers construction specifications are designed to limit the adverse effects of construction to the maximum extent practicable. These specifications include provisions for prevention of water and air pollution, re-seeding of worked-out borrow areas, erosion control, and prevention of unnecessary damage to trees.

4.1.2 IMPACT OF THE PROJECT

4.1.2.1 Landforms

The project would destroy some existing landforms in the Blue Waters area. These landforms are low-lying, poorly drained, often flood prone areas which have disconnected drainage patterns. This construction would involve the commitment of these lands for flood control for at least the economic life of the project, i.e., 100 years.

4.1.2.2 Groundwater

This project will have no significant effect on the changes in groundwater level trends. Channel improvements and additional pumping capacity will reduce the amount of recharge to the groundwater due to precipitation. Reducing the time of ponding in natural detention areas by pumping will reduce the amount of local rise in groundwater which occurred prior to installation of additional pumping. The impact of these changes may be both beneficial and detrimental. Since a shortage of groundwater does not exist at the present time in the Blue Waters Ditch Area and no major increase in groundwater usage is forecasted, the project will have no detrimental effect on groundwater supply. In terms of urban development, preventing the groundwater table to rise may prevent damage to structures. The effect on irrigation and crop yield is also expected to be minimal.

4.1.2.3 Water Quality

The project will have little direct effect on the water quality of the area. However, during construction of the new ditches and pump station and enlargement of the old ditches, suspended solids and siltation will be temporarily increased. After construction is completed, the drainage improvement will increase flow rates during periods of runoff, resulting in increased ability to maintain materials in suspension and transport other pollutants. Seeding of the ditch banks and planting of the wildlife corridors along the ditch will help in reducing some of the runoff.

The water in the ditches is now very high in nutrients and eutrophic conditions result where there is standing water for any period of time. The project will not improve the water quality, but it will reduce the areas of standing water outside the ditches. Water still remaining in the ditches during low water will still be subject to eutrophication.

Improved flood protection will favor additional development in the area. If this takes place, the amount of runoff and sewage entering the ditches will increase.

4.2. BIOLOGICAL IMPACTS

4.2.1 BIOLOGICAL COMMUNITIES

Since little natural habitat remains in the project area, the proposed project would not have the effect of destroying or altering large acreages of existing natural habitat. However, the scarcity of habitat would increase the impact of any losses due to construction.

No unaltered natural wetland or upland habitat exists in the project area, most having been converted into ditches. The proposed new water surface area of these ditches would be increased from 1.3 acres to 19.4 acres by new ditches and enlargement of old ones. This enlargement along with the new pump station could increase areas of standing water due to more infiltration. The aquatic plant species that have established in and around the old ditches will be disturbed where those ditches are enlarged. Some of these species, during construction may also disturb established aquatic communities. These aquatic communities are expected to re-establish themselves after construction. The species that are there are unrooted, hardy, and adaptable species, and if the water quality is not allowed to decline, most will probably persist as long as a minimum of semipermanent water is available for them.

According to the resource studies conducted during the inventory stages of this proposed project, over 80 percent of the project lands are being utilized for urban or agricultural purposes. The State of Illinois presently has the power to regulate development in the area in the 100-year

flood, and the project would require enforcement that would limit additional urban development in remaining flood-prone areas. However, this beneficial effect is tempered by the realization that any efforts to change or alter drainage patterns or rates of flow could result in additional levels of disturbance which could cause additional losses of remaining habitat areas.

Structural features of the Selected Plan would affect 0.3 urban acres, 58.5 agricultural acres, 34.4 acres of old field, 5.3 acres of woods, 40.7 acres of terrestrial ditch margins, and 17.3 acres of aquatic ditch habitat. The project would also temporarily alter 13.4 acres of agricultural land, 4.8 acres of old field, and 1.5 acres of terrestrial ditch margin habitat. However, environmental quality features of the plan would create 32.1 acres of terrestrial habitat as greenbelts along five new or improved ditch margins and 17.0 acres of terrestrial habitat on one site to be used for disposal of material excavated from the ditches. This would be accomplished by planting game plots with mixtures of grasses, legumes, small shrubs, and trees which would provide wildlife food and cover, would stabilize the soil, and would improve the esthetics of the area. In actuality, 29.0 more acres of terrestrial habitat, not including urban and agricultural habitat, would be lost than created, but the substantial improvement in quality by the wildlife plantings on the areas created would offset the losses.

4.2.2 SPORT FISH AND WILDLIFE

Fishing is for mostly rough fish in the Blue Waters area, and fishing is a common practice though probably not a major recreation or source of food for people living in the area. It is, however, a recreation that has a following, and if fishing success was increased, the use of fishing as a recreational activity by people of the area would be expected to increase immediately. Since opportunities for wholesome outdoor recreation are limited in the area, any change leading to increased recreational fishing would be desirable. It is difficult, however, to see how the fishing resources of the immediate area could be improved to the point where many outsiders would be attracted.

The increase in the number of ditches would not increase their utilization due to the fact that the new ditches would not contain any appreciable amount of permanent water. The pump operation would, if possible, be designed to maintain the present level of standing water in the existing ditches, particularly Blue Waters and Goose Lake Ditches. The environmental buffer area along the ditches would offer potential for passive recreation, including bird watching and nature walks.

4.2.3 THREATENED OR ENDANGERED SPECIES

The Blue Waters Ditch area is not known to contain critical habitat for any species considered threatened or endangered nationally.

However, it is possible that two species, the perigrine falcon and the southern bald eagle, occasionally stray into the area. Also Indiana bats and grey bats could possibly feed in the area. Table 9 summarizes the impacts of the project on specific species on the National (Fish and Wildlife Service, 1974) and Illinois (Illinois Department of Conservation, 1978) lists of rare and endangered species. No species on the National list depend upon habitat in the Blue Waters Ditch area for survival; but it must be kept in mind that most endangered species are in difficulty because of the loss of habitat, and, consequently, all remaining habitat for endangered species must be considered important. A heron rockery that is the last known rockery in Illinois used by the Snowy Egret and Little Blue Heron, is located just north of the Blue Waters Ditch area. This rockery will not be directly affected, but feeding areas used by residents of the rockery could be adversely affected.

4.2.4 PESTIFEROUS SPECIES

The project will have very little impact on pestiferous plants and animals. However, the improved drainage of the area due to the new and enlarged ditches and pump station will aid in vector control by eliminating areas of standing water used by mosquitoes for reproduction.

4.3 IMPACTS ON SOCIO-CULTURAL ASPECTS OF THE ENVIRONMENT

4.3.1 INTRODUCTION

In determining the social impact of the project it is useful to keep in mind the systemic context of the urban region which contains the Blue Waters area. Much like a biological organism, the urban system is composed of many interrelated parts performing different functions. A change affecting one part such as a change in interior drainage impinges on other units in this system and produces secondary changes. The impacts of these secondary changes are themselves dependent on many factors; and the activities of other units in the system, such as the action of local and state governments, will affect the direction and outcome of the change produced by the initial action. Utilizing this systemic focus, the assessment of impacts will be concerned with the effects of improved interior flood control on the social components of the Blue Waters area. Since the multiplicity of intervening factors may greatly change projected outcomes, these significant intervening variables are identified where possible.

4.3.2 POPULATION GROWTH

Housing construction in the Blue Waters area has lagged behind much of the rest of the St. Louis metropolitan area. The conditions created by poor drainage - flooding and excessive standing water - have

contributed to this lag. The Blue Waters area is close to the downtown St. Louis business district, and with adequate drainage facilities could become an attractive area for development. The project will make available for development land that is currently idle, sparsely developed or agricultural because of poor drainage, and thus may encourage more residential construction and increased populations for the communities in Blue Waters area.

The stimulus of project impacts upon the socio-economic environment would be one of increasing the supply of adequately drained land for development which, in turn, would increase the area's attractiveness for residential use. A computer simulation model developed by the University of Missouri at St. Louis for the Corps of Engineers has made population projections for the Blue Waters area. Using the amount of land made available by improved drainage for urban development, the simulation predicted that from 1970 to 1980, the population would have the potential to increase up to 14 percent with protection from the 100-year flood. Without such protection, the anticipated population increase during the same time span was less than one percent. It should be noted that the projections were made prior to finalization of plans for Interstate 255, which would bisect the project area. With the new accessibility to St. Louis provided by the new interstate, some increased pressure for urbanization could result. This would tend to be counterbalanced by State of Illinois legislation which permits stringent control over development in the 100-year flood plain. Therefore, state control of flood-prone areas would effectively limit any new structural development to less susceptible areas.

4.3.3 LAND USE

4.3.3.1 Flood Plain Development

The urbanization of flood plain is a controversial issue in the St. Louis metropolitan area. Generally, proponents of flood plain development insist on the right of the individual to live where he wants, and believe that given sufficient political and monetary impetus most flood plains offer desirable developmental potential. Often attendant to this philosophy is the equation of development with beneficial economic growth, and a firm belief in such progress. Opponents to flood plain development tend to believe that it unnecessarily increases the probability of damage due to flooding and consequently look upon such developments as economically and socially detrimental. Attendant to this philosophy is the feeling that flood plains serve a natural function by flooding, and impediment of this function is regressive. The purpose of this discussion is to bring pertinent issues to the public for examination, not to resolve the differences in flood plain management philosophies.

The proposed project will encourage development in presently poorly drained areas. Such development is expected to be largely residential, but may also include commercial and industrial pursuits. This will increase the tax base of local communities and will probably be considered desirable by local governmental interests. The proposed plan may create a false sense of security leading to increased development and investment

and consequently increased risk. Storms which exceed the design capacity of the system (100-year frequency) may cause flood damages that were totally unexpected by local residents. It is noted that the prospect of severe flooding from the Mississippi River is virtually eliminated by the present levee system, and that the type of flooding that is experienced in this area is ponded interior drainage. The damages from interior drainage, while damaging, do not approach the devastation which sometimes occurs from overbank flooding.

In order to implement the various features of the recommended plan approximately 64 acres of land would be consumed by ditches and rights-of-way, and 19 acres would be converted to environmental buffer. Agricultural land would be impacted the most losing about 40 acres permanently to construction and right-of-way, and approximately 45 acres temporarily, during construction.

4.3.3.2 Preservation of Storage Areas

A substantial portion of the Blue Waters area is presently subject to flooding by a 100-year frequency event. With the project in place, some 1,900 acres, as outlined in Plate 6A would still be subject to flooding, but this acreage is largely undeveloped. The various alternative plans presented in this report, including the selected plan, have been formulated on the basis that this latter storage area would remain available during the life of the project. That is, benefits attributed to the project would be protected and the existence of the project would not encourage future construction that would, itself, be subject to damage while also taking up storage and causing higher water levels elsewhere.

The traditional or conventional way to preserve such storage areas is to require the local sponsor to acquire an interest in the land by purchase in fee or by easement. In this instance, the size of the area and its close proximity to the urban area cause this to be impractical. The local sponsor believes that the requirement is also unnecessary because, under the provisions of Section 65f, Chapter 19 of the Illinois Revised Statutes, the State of Illinois is empowered to regulate construction within the 100-year flood zone such that additional flood damages are not incurred and that storage is not impaired.

The State intends to implement the statute within the Blue Waters area during calendar year 1977 and will define the 100-year flood zone on the basis of Plate 5 of this report. Because the State would enforce regulation with or without this project, no economic cost would accrue to the project and no costs for preserving the storage in the 100-year flood zone (with the project in place) have been included in the cost estimate or in the economic analysis.

In response to concerns as to the sufficiency of regulation versus acquisition, the following arguments are presented:

Non-Structural measures and flood plain regulations, in particular, have been touted as reasonable and progressive flood control measures. The project for the Blue Waters area will test the sincerity of Federal support for such non-structural preventatives.

Acquisition in fee could be detrimental to project justification although the impact would not be known until acquisition and lease-back activities would be completed. Acquisition of flowage easements, even if attainable for token consideration, would give rise to high implementation costs which could jeopardize project justification. Regardless of the economic impact and cost, the State of Illinois will not preserve storage in this manner, because this approach would establish a precedent and would circumvent or tend to invalidate the State law.

The State has furnished a letter of intent which expresses a willingness to sponsor the project and an intention to provide legally binding assurances under the provisions of Section 221 of Public Law 91-611. The letter of intent, inclosed in Appendix C, Letter of Intent, defines the necessary "lands, easements, and rights-of-way" provisions and the encroachment-obstruction safeguards. Unless one questions the authority of the State to enter into such an agreement or its financial ability to perform, it must be concluded that the Federal investment is adequately protected.

4.3.4 OUTDOOR RECREATION

Presently, the drainage channels in the Blue Waters area are subject to recreational fishing. Enlargement of these channels may slightly increase this utilization. The potential offered by the project for recreational development along the drainage ditches (bike trails, hiking areas, etc.) is recognized, but such development must result from local government actions.

4.3.5 COMMUNITY COHESION

The existence of two distinct communities within the Blue Waters area, Cahokia and Centreville, has been discussed in PART TWO, "The Environmental Setting Without the Project." The proposed project has the potential for enhancing the cohesion within each of these communities. By cohesion it is meant the forces in the form of shared experiences and perceptions that bind individuals together into a group possessing some sort of collective identity. In the Blue Waters area, the flood control aspects of the project may contribute to intra-community cohesion.

Flood control benefits will reduce a source of problems in the Blue Waters area and could contribute to a more positive valuation of the area by residents. The area may be perceived as a better place to live as a result of the flood control features of the project.

It should be noted that recommended plan does not offer complete protection to existing developed areas for a 100-year criteria storm. Plate 6A shows the areas that would still be susceptible to flooding in the 100-year event with recommended improvements in place. Some of these unprotected areas are currently occupied by homes and businesses. This fact may lead to a devaluation of such areas as desirable places to live and work.

4.3.6 PUBLIC SAFETY

In general, the construction of wider drainage ditches in the Blue Waters area will not constitute any greater safety hazard than the ditches in use. Because of the low flood plain relief, stream velocities are not great in the present drainage ditches. No changes are anticipated in these velocities. All channel sides will be sloped at a 3H to 1V ratio.

4.3.7 CULTURAL RESOURCES

4.3.7.1 Archaeological Sites

Ditching and other proposed improvements for the Blue Waters area would not affect any of the 24 archaeological sites located in the area. During construction, should any archaeological materials be discovered, construction work would be redirected until a determination of the significance of the resources could be made and coordination with the Illinois State Historic Preservation Officer effected.

Prior to the formalization of the present recommended plan, two archaeological sites located in areas that were to have been impacted by components of the 1975 plan (see Section 1.4 of this statement for an explanation of this plan) were excavated under the auspices of the National Park Service. These excavations have yielded significant amounts of information about woodland - Mississippian cultures in the area. Information on these sites (S-341 and S-332) is contained in National Park Service reports for contracts CX-4000-3-0023 and CX-4000-3-0047.

If during the construction phase of the project, undiscovered archeological resources are encountered, work will be redirected until appropriate evaluation of materials can be made.

4.3.7.2 Historical Sites

No properties listed on the National Register of Historic Places or the Illinois Historic Structures Survey will be affected by the project.

TABLE 9
IMPACT ON RARE AND/OR ENDANGERED
SPECIES OF THE U.S. AND ILLINOIS

<u>Species</u>	<u>Ill.</u>	<u>U.S. Dept. of Interior</u>	<u>Impact of Project Features</u>			
			<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
REPTILES						
Slider	E		A	A	B	B
Great Plains Rattle Snake	T					
BIRDS						
Double-crested Cormorant	E		A	A	B	B
Snowy Egret	E		A	A	B	B
Little Blue Heron	E		A	A	B	B
American Bittern	E		A	A	B	B
Black-crowned Night Heron	E		A	A	B	B
Coopers Hawk	E					
Red-shouldered Hawk	E		A	A	B	B
Southern Bald Eagle	E	E				
Northern Bald Eagle	E					
Osprey	E					
Marsh Hawk	E		A	A	B	B
Peregrine Falcon	E	E				
Yellow Rail	E		A	A	B	B
Purple Gallinule	E		A	A	B	B
Common Gallinule	T		A	A	B	B
Upland Sandpiper	E		A	A	B	B
Barn Owl	E					
Brown Creeper	E					
Veery	T					

IMPACT ON RARE AND/OR ENDANGERED
SPECIES OF THE U.S. AND ILLINOIS

<u>Species</u>	<u>Ill.</u>	<u>U.S. Dept. of Interior</u>	<u>Impact of Project Features</u>			
			<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
BIRDS (Cont.)						
Loggerhead Shrike		T				
Brewer's Blackbird		T		A	A	B
Henslow's Sparrow		T				
MAMMALS						
Gray Bat		E		E		
Indiana Bat		E		E		
Impact: A - Possibly adverse				Status: E - Endangered		
					B - Possibly beneficial	T - Threatened
						Blank Space - No significant impact
Project Features:	1	- Pump station				
	2	- New ditches				
	3	- Zoning of 100-year flood plain				
	4	- Wildlife plantings				

5. ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

5.1 GENERAL

The only impacts that would be truly unavoidable if this project were built would be the impact of construction activities and the commitment of approximately 64 acres for purposes of flood control, which would result in the decline in the already limited fish and wildlife values of the Blue Waters area. A comprehensive definition of the term adverse is utilized, recognizing that there are legitimate differences of opinion regarding the effects of various environmental impacts.

5.2 ADVERSE IMPACTS RESULTING FROM CONSTRUCTION OR OPERATION OF THE PROJECT

5.2.1 CONSTRUCTION

Construction operations will cause noise and dust pollution. This may be particularly disturbing in residential neighborhoods. Construction will also temporarily increase silt loads in existing ditches and may adversely impact local aquatic communities.

5.2.2 LAND USE

The project may encourage additional development of the protected flood plain and this may be considered adverse by those opposed to flood plain development.

6. ALTERNATIVES TO THE PROPOSED ACTION

6.1 FORMULATION OF PLANS

The formulation phase of the Blue Waters Study involved the identification, consideration, and evaluation of alternative plans for resolving the problems and needs associated with interior flooding in the Blue Waters area. These needs, which were identified by the public involvement processes presented in Section 9 of this environmental statement, led to the formulation of two broad planning objectives:

(1) The reduction of financial losses and economic and social disruption within the Blue Waters area due to periodic flooding.

(2) The enhancement of the esthetic and environmental quality of the area.

Resource management strategies were then identified which would address these planning objectives. Applicable measures identified were as follows:

Non-structural measures -

- Zoning
- Flood Insurance
- Building Code provisions
- Permanent flood plain evacuation
- Flood proofing

Structural measures -

- Floodwalls
- Levees
- Pump stations
- Channel modifications
- Reservoirs

Environmental Measures -

- Buffer areas of wildlife habitat
- Fish habitat
- Preservation of existing habitat
- Preservation of existing cultural resources

The alternative plans discussed below represent strategies for meeting the planning objectives using various resource management strategies. Three alternatives, system-wide protection, relocation, and "no-action," were presented in the draft environmental statement. As indicated in Section 1 of this final environmental statement, however, subsequent iterations of the planning process have resulted in a substantial modification of the plan recommended in the 1975 draft EIS. For this reason, the 1975 plan, and two others, the National Economic Development (NED) alternative, and the Environmental Quality (EQ) alternative are also described. For comparative purposes the "no-action," NED, EQ and the recommended plans have been arranged in a "system of accounts" so that benefits and costs of these alternatives can be seen.

6.2 RELOCATION

Two approaches were considered: Total relocation of all structures in flood hazard areas and a relocation-flood proofing combination. The first alternative would require the relocation of 2,090 structures and trailers in the 100-year flood plain. The second alternative would require the relocation of 299 structures and trailers and the flood proofing of 1,791 structures in the 100-year flood plain. Costs for these alternatives are \$69,460,000 and \$34,369,000, respectively.

Existing flood hazard areas would either remain as public lands or be resold to private interests under a stipulation in that only compatible land uses would occur in those areas. These alternatives would enhance and retain the natural values in flood plain areas by precluding urban development and restricting development of those land uses which are more compatible with an agricultural setting. However, they would also have an urbanizing effect on land outside of the flood plain due to the enforced emigration of those residents and businesses presently living in flood hazard areas which would be relocated. Social effects of these alternatives would be significant. By and large, the people in the Blue Waters area that would have to be relocated are satisfied with their residences and communities; they would only leave if forced to go. These people would also have to be removed from the Blue Waters area entirely because there is limited nonurbanized "dry" ground available. The relocation of a sizable portion of the area's population would have destructive effects on the social life of area communities and would likewise have a major impact on the community school, tax base, and business patterns in the Blue Waters area.

6.3 NO ACTION

Under this alternative, the status quo in the Blue Waters area would be preserved. Following this course of action would result in a saving of some \$10,675,000 in public money. This course of action may maintain the present proportions of urban and agricultural land use in the area; however, recent evidence indicates that in the absence of any project, there will be a continual conversion of agricultural land to urban use even in flood hazard areas. While a substantial savings of public funds would result, this course of action does not deal with the problem of internal ponding of water in the Blue Waters area and the damage this water does to the communities in the area.

Predictions of the benefits and costs, if the "no action" alternative is selected, is difficult at best, due to the complex social and economic forces which might be expected to work in the Blue Waters area over the range of probable future conditions. In some aspects (physical, biological, and cultural) of the area, significant changes from the existing conditions would not be expected. Many of the physical aspects of the Blue Waters area could be expected to remain relatively constant. Geological elements, climate, and hydrologic conditions would be expected to remain nearly the same, or change at a relatively slow rate. As noted in the environmental inventory, the biological communities common to the Blue Waters area are limited to those which can tolerate man and highly disturbed habitats. The same conclusion could be drawn for future environments in the Blue Waters area. If urbanization continues, it can be presumed that those plants, animals and fish species which can tolerate increased urbanization will be the ones that survive.

The projection of the cultural aspects of the Blue Waters area without the project are also very difficult to establish. General trends in local economy and employment patterns are likely to continue, at least into the immediate future. The availability of undeveloped land may help establish new employment sources if industrial or commercial development should take place. However, the introduction of large industrial sources of employment is unlikely. Similarly, intensive residential development is not expected, at least in the immediate future. In terms of community cohesion and service, future conditions in the area probably will be much the same as those that exist now. Flood occurrences will continue to disrupt community activities as well as normal activities of the residents. Normal interaction of many residents will be impeded because of closed transportation routes, emergency flood fighting, and health hazards associated with flooding. Plans for improved community drainage facilities are in a state of limbo until a primary flood control system is effected. If no action were selected as the alternative, local attempts to improve the drainage conditions would be severely impeded.

The expectation that all development in the area would eventually migrate to overcome the adverse physical handicap of flood plain development is probably unrealistic as current indications are to the opposite. Interviews with developers, realtors, and community officials indicate that patterns of existing community development and growth are more than likely to continue regardless of action by the Federal government. Thus, it is reasonable to expect that even as existing housing deteriorates and becomes uninhabitable, it will be replaced by new housing which will not be of significant higher value or quality, nonetheless, shelter and protection for approximately the same number of family units as presently resides in the Blue Waters area will be provided.

6.4 1975 PLAN

As outlined in Section 1.4 of this environmental statement, the proposed plan discussed in the draft environmental statement called for the improvement in construction of approximately 15 miles of channel, a 2,600 c.f.s. pump station, and the regulation or acquisition of two low-lying areas totaling 1,000 acres as natural storage detention sites. The cost of this plan was \$27.5 million.

Environmental impacts associated with this alternative were presented in the draft environmental impact statement. In further analysis and consultation with the local sponsor, the 1975 plan was judged to be too expensive. It was also determined that flood plain regulation as a flood control measure would be less expensive while providing the means to prevent future damages in the Blue Waters area. Additional planning was therefore directed toward refining a plan for the area that met the broad planning objectives outlined in 6.1, and which was acceptable in terms of cost and land management philosophy to the local sponsor.

6.5 NATIONAL ECONOMIC DEVELOPMENT (NED) PLAN

6.5.1 INTRODUCTION

The NED plan is identical to the recommended plan with the exception that wildlife enhancement features of the recommended plan are not included.

6.5.2 IMPACT OF THE NED PLAN ON THE ENVIRONMENT

6.5.2.1 Physical Environment

Impacts on the physical environment would stem from construction activities and the presence and operation of the project. Construction and earthmoving operations, concentrated in the area of the project, would be a source of noise, vibration, and dust for the period of construction; the activity, however, would be diffused among the various ditches and road crossings. Some normal pursuits of persons in the vicinity, especially along the channels and road crossings, would be disrupted. The noise, dust, vibrations and visual impact of construction would be a short-term detriment to the tranquility of residents.

Widening the channels and mounding the earthwork along the channels would result temporarily in increased erosion and, thus, in the sediment load carried by the improved channels.

Environmental protection provisions now incorporated in Corps of Engineers construction specifications are designed to limit the adverse effects of construction to the maximum extent practicable. These specifications include provisions for prevention of water and air pollution, re-seeding of spoil areas, erosion control, and prevention of unnecessary damage to trees.

A minor impact of the operation of the NED project on the physical environment would be on groundwater. The project would have no significant effect on groundwater level trends for the overall American Bottoms area. For the Blue Waters area, the channel improvements and more efficient pumping would decrease the extent and duration of stormwater ponding and, in this way, could reduce groundwater recharge. In that no major increase in groundwater usage is forecasted, the impact is viewed as somewhat beneficial in that the groundwater level is currently rising, and could eventually cause damage to urban structures.

The ditching required by the NED project would destroy some existing landforms in the Blue Waters area. These landforms are low lying, poorly drained, flood-prone areas with disconnected drainage patterns.

The impact of the NED plan on water quality is difficult to predict. Water quality in the ditches and ponds at the present time is rather low. A significant change from existing conditions is not indicated.

6.5.2.2 Biological Environment

a. Non-structural Action

As in the EQ Plan, the State of Illinois will limit urban and agricultural development in the area of the 100-year flood by zoning. This will protect existing fish and wildlife habitat in this area.

b. Structural Action

During construction, water quality in the adjacent ditches would be temporarily impacted by increased levels of suspended solids and resulting turbidity which may adversely affect existing aquatic communities. Also during construction, short-term increases in dust and noise levels will occur. Seventeen acres of aquatic habitat and 23 acres of terrestrial habitat, along with 32 acres of agricultural land would be temporarily altered during construction. Twenty-two acres of terrestrial habitat and 27 acres of agricultural land would be permanently lost.

c. Preservation and Enhancement of Fish and Wildlife Habitat

Since no measures to preserve and enhance fish and wildlife habitat are incorporated into the NED plan, the above-mentioned losses of fish and wildlife habitat would not be replaced.

6.5.2.3 Socio Economic Environment

a. Population

Similar to the impacts of the Selected Plan, the improved pumping and channels provided by the NED Plan would increase the supply of adequately drained land and would increase the area's attractiveness for residential use.

Relief from interior flooding would make available for development, land that is currently idle, sparsely developed or agricultural because of poor drainage, and thus may encourage more residential construction and increased population for the Blue Waters area. A computer simulation model has made population projections for the Blue Waters area based upon the amount of land made available by improved drainage. The simulation predicated that from 1970 to 1980, with protection from a 100-year flood, the population would have the potential to increase up to 14 percent. Without such protection, the anticipated population increase during the same time span was less than one percent. With the increased accessibility to St. Louis provided by the new interstate, increased pressure for urbanization should result. The exact future population of the Blue Waters area is difficult to predict, however, an element of the NED Plan would serve to temper any predictions of large increases. The State of Illinois has enacted legislation that would place stringent controls on development in the 100-year flood plain. Such legislation would effectively limit any new structural development to less susceptible areas.

b. Recreation

At present, drainage channels such as Blue Waters Ditch are subject to recreational fishing. The widening of existing ditches would temporarily decrease such activity during construction and not tangibly increase fishing opportunities because the new ditches would not contain any appreciable amount of permanent water.

c. Community Cohesion

Like the Selected Plan, the NED Plan has the potential for enhancing the cohesion within the Blue Waters communities. Improved drainage would reduce a source of problems in the Blue Waters area and could contribute to a more positive assessment of the area by the residents.

d. Land Use

The primary impact of the NED Plan would be on the land required to implement the various project features. Approximately 64 acres would be consumed by ditches and rights-of-way. Agricultural and vacant land use categories would be impacted the most, permanently losing about 40 acres to ditches and rights-of-way, and with about 45 acres subject to short-term disruption.

e. Archaeological Sites

Ditching and other proposed improvements of the NED Plan for the Blue Waters area would not affect any of the 24 archaeological sites located in the area.

f. Historical Sites

No properties listed on or declared eligible to be on the National Register of Historical Structures Survey would be affected by the NED Plan.

6.6 ENVIRONMENTAL QUALITY PLAN

6.6.1 GENERAL

The Environmental Quality (EQ) Plan for the Blue Waters area presented here, was prepared in accordance with the guidelines and criteria set forth by the Water Resource Council's Principles and Standards for Planning Water and Related Land Resources, (10 September 1973) and Corps of Engineers regulations. The objective of the EQ plan is to meet current and projected needs and problems of the area in such a manner that contributions are made to the quality of the natural and cultural environment.

6.6.2 FEATURES OF EQ PLAN

The EQ Plan has three basic features: (1) non-structural; (2) structural flood management strategies; and (3) preservation and enhancement of the environment. These major features are described in detail below.

6.6.2.1 Non-Structural

As in the selected plan, the non-structural feature of the EQ Plan would entail terminating any future urban development within the limits of the 100-year frequency flood, as defined by the St. Louis District, U. S. Army Corps of Engineers. This measure would prevent further development of land susceptible to flooding; and, in effect, would create large natural ponding areas and would preserve the wildlife habitat existing in the low areas.

6.6.2.2 Structural

The structural features of the EQ Plan would provide for the installation of a pump exclusively for the Blue Waters area, the retention of existing ditches, the construction of four new channels, the construction of six new permanent fish ponds, enlargement of Lily Lake, and the preservation of one wetland. The four new channels would improve the drainage of small urbanized areas which currently flood very often, some beginning at the two-year frequency. Like the pump, the ditches would aid in supplying reasonable flood protection from interior sources. The construction of six new fishing ponds by excavation, the enlargement of Lily Lake, also through excavation, and the formal establishment of a marsh area creates storage capacity for storm runoff, would provide areas for urban fishing and pockets of small mammal habitat. TABLE 10 gives the size and cost of each pond. In locating and designing the fish pond the following criteria were utilized:

TABLE 10 Environmental Quality Features, Areas and Costs

A. PONDS

<u>NAME</u>	<u>AREA</u>	<u>COST</u>
Pond 1	25.01	\$ 2,007,000
Pond 2	11.35	857,100
Pond 3	37.35	4,200,000
Lily Lake	34.74	2,300,000
(A)	(26.26)	
(B)	(8.48)	
Pond 5	59.54	2,900,000
Ponds 6 & 7	21.7	1,300,000
Marsh	<u>10.2</u>	<u> </u>
TOTAL AREA	199.85 Acres	\$13,564,100

B. BUFFER ZONES

$$\text{TOTAL} - 100.1 \text{ Acres} \times \$600/\text{Acre}^1 = \$ 60,060$$

C. TOTAL COST

TOTAL COST EQ FEATURES ²	\$13,624,160
TOTAL COST EQ PLAN	\$24,070,000

See Plate for locations of buffer zones.

¹ Includes cost of plantings.

² Excludes cost of ditching and pump

- a. Formal ponding areas in the form of fish ponds should be located adjacent to or in the route of ditches carrying only stormwater runoff.
- b. All fish ponds should be located in natural low areas within the limits of the 100-year flood.
- c. Fish ponds should be located at sites already having public access.
- d. To insure sufficient supplies of oxygen, the fish ponds should maintain permanent water with an average depth of 12 feet or greater for at least 25 percent of the area.
- e. The ponds should have a steep bank and the bottom should be deeper around the immediate periphery. The bottom should rise in a cone-like profile at a gradual slope, creating a high center of ground just above the water roughly at the centroid of the pond.
- f. The ponds should have a convoluted shoreline to obtain high shoreline development, encouraging fish reproduction.
- g. Material should be placed at the bottoms of the fish ponds to serve as fish attractions and solid substrate for the development of favorable benthic organisms.
- h. As many trees and as much other vegetation as possible should be left around the fish ponds. To further a natural setting, formal recreation development should not take place.

6.6.2.3 Preservation and Enhancement of Wildlife Habitat

This measure was selected for both environmental reasons and in consideration of the project area's needs. Enhancement of the environmental quality of the Blue Waters area would provide a greater diversity of life systems, increase the aesthetic value, and widen the range of recreational opportunities. Wildlife habitat would also provide intangible benefits to an area by way of wooded areas; serve to reduce summer temperatures, would buffer winds, would retard water erosion, and would conserve soil moisture.

Several of the enhancement measures have dual utility of also serving the hydrologic needs (improved drainage) of the Blue Waters area, e.g., fish ponds, natural ponding areas, and the retention of the existing ditches. Several measures, however, are incorporated into the EQ Plan to exclusively serve the environmental needs of the area and to utilize in some fashion project features or existing features. The environmental features include the following:

a. A 50-foot wide green belt would be created on both sides of all ditches, existing or proposed, except where the width must be reduced due to the presence of existing structures. This measure would preclude the present practice of burning the ditch margin and would create approximately 100 acres of wildlife habitat.

b. Existing wildlife habitat, particularly forest, old field, and the above-proposed green belt ditch margins would be supplemented by plantings of shrubs, trees, grasses, and legumes as recommended by the Illinois Department of Conservation.

c. All ponds would be stocked with fish, the amount and species of which would be recommended by the Illinois Department of Conservation.

d. Water quality in the area would be monitored for a time to determine if all water quality criteria are satisfied. If deficiencies are found, appropriate action would be taken to locate and correct the problem.

Annual fishing benefits valued at \$96,750 would be derived from preservation and creation of aquatic habitat in the project area. Even though this area has a relatively poor quality fish fauna, it does receive fairly high fishing pressure because of its proximity to an urban area. With the creation of additional aquatic habitat (201 acres) it is assumed that fisherman-use per acre will not increase. The only increase in use will be due to the additional habitat. Missouri Department of Conservation records (unpublished) indicate an annual range from less than 20 fisherman-days per acre (Thomas Hill Reservoir) to 700 fisherman-days per acre (August A. Busch Wildlife Area) for public fishing areas. An estimate of 300 fisherman-days per acre for the Blue Waters area was selected as a reasonable approximation. This amount was then multiplied by an assumed dollar amount per fisherman-day to arrive at the total dollar benefits accruing from these measures. Since the project was authorized prior to 25 October 1973, it does not fall under the jurisdiction of the Water Resources Council Related Land Resources, Principles and Standards (Federal Register, 10 September 1973). Because of this fact, Supplement No. 1 to Senate Document 97, which established a range of recreation unit values from \$.50 to \$1.50 per day, was used. The value of \$1.50 was used for the value of a fisherman day.

6.6.3 IMPACTS OF THE ENVIRONMENTAL QUALITY PLAN

6.6.3.1 General

Although this plan was specifically formulated to preserve and enhance the environment, the Environmental Quality Plan for the Blue Waters area as described in the previous section, would still impact the environment. The impacts, however, would be of a different nature than those of the NED or Selected Plans.

6.6.3.2 Physical

Impacts on the physical environment would stem primarily from construction activities of new ditching, improved ditching, construction of the pump station, and excavation of the fish ponds. Construction, earthmoving, and dredging operations in the area of the project would be a source of noise, vibration, erosion, and dust and suspended sediment for the period of construction. All impacts of construction would be of short-term detriment.

The impact that the EQ Plan would have on groundwater level trends is uncertain. Unlike the NED and Selected Plans in which channel improvements and increased pumping would reduce the amount of recharge to the groundwater, the EQ Plan would retain some of the stormwater and store it in the fish ponds. However, due to the limited storage capacity of the fish ponds, the impact insofar as raising the groundwater level would be insignificant in relation to the existing situation.

Water Quality in the existing ditches and lake is rather low. A significant change due to the EQ Plan is not anticipated.

6.6.3.3 Biological

6.6.3.3.1 Non-Structural Action

The State of Illinois presently has the authority to restrict structural development in the area of the 100-year flood. This will tend to protect existing fish and wildlife habitat in this area.

6.6.3.3.2 Structural Action

During the construction of the six ponds, five new ditches and the pump station, water quality in the adjacent ditches would be temporarily impacted by increased levels of suspended solids and resulting turbidity which may adversely affect existing aquatic communities. Because the existing aquatic habitat of the Blue Waters area is of such poor quality and because considerably more aquatic habitat would be created by construction of the new ponds, such temporary impacts are considered minor.

Creation of six ponds and construction of the pump station would take approximately 189.6 acres of terrestrial habitat. However, since this would be practically all agricultural land, very little wildlife habitat would be lost.

6.6.3.3.3 Preservation and Enhancement of Fish and Wildlife Habitat

The buffer strips of wildlife plantings along the ditches would serve to stabilize the soils, reducing erosion and the resulting suspended solids in runoff from the area. They will also create 100 acres of terrestrial wildlife habitat in an area in extreme need of such habitat.

The six ponds and one marsh would add approximately 200 acres of aquatic habitat, considerably increasing the fishing opportunities of the area. The shaping and management of these bodies of water would greatly enhance their quality as aquatic habitat. Also, by monitoring the water quality of the area, any existing or potential problems could be quickly identified and corrected.

6.6.3.4 Socio Economic

6.6.3.4.1 Population

The effect that the EQ Plan would have on population changes in the Blue Waters area would be similar to that of the NED Plan and Selected Plan, i.e., increases in the supply of adequately drained land and increased attractiveness for residential use. The exact future population of the Blue Waters area is difficult to project; however, given the new accessibility that the area will gain via the construction of I-255 and the alleviation of the interior drainage problem (by whatever means), it seems reasonable to assume that the population is not an adverse impact; however, the physical distribution of settlement must be considered. To prevent the perpetuation of the drainage problem by people settling in areas prone to flooding beyond the protection offered by the EQ Plan, the plan stipulates that all further development of land in the 100-year flood plain be precluded and directed toward less floodable land. In essence, this portion of the plan is already implementable by the State of Illinois, and additional encouragement in this direction is provided by the Federal Flood Insurance Program and by the restrictions of P.L. 93-234.

6.6.3.4.2 Land Use

The Environmental Quality Plan, as described earlier consists of both structural and non-structural components. The plan would visibly affect about 300 acres of land and indirectly affect most of the study area. The structural features of ditching, pump station, fish ponds, and buffer zones along most ditches would directly impact about 320 acres of land in the project area. Of the land directly affected, approximately 270 acres is presently in agricultural use and 50 acres is rights-of-way or vacant land.

The non-structural features of natural ponding areas and exclusionary zoning on flood prone areas would indirectly affect land use in that it would preclude urban development from these areas and direct it toward less floodable land.

On the whole, the Environmental Quality Plan would create more open space and ponds, greatly increasing the urban area's recreational potential. This would be at the expense of existing land uses, most notably agriculture.

6.6.3.4.3 Outdoor Recreation

Presently, the drainage channels and Lily Lake are the only sources of recreational fishing in the Blue Waters area. Considering the dearth of

existing facilities, the Environmental Quality Plan would increase greatly not only recreational fishing opportunities, but "urban fishing" opportunities, a much desired feature, but one not easily created. Except for Lily Lake, which is already developed, all of the fish ponds would be undeveloped, walk-in areas, with a natural setting. The quality of the experience would be an improvement over the existing resources and a greater diversity of fish species could result. The EQ Plan would also provide 100 acres of environmental buffer for more passive recreation including bird watching and nature walks.

6.6.3.4.4 Public Safety and Health

In general, the construction of new wider or deeper drainage ditches would not constitute any greater safety hazard than the ditches already in use. Because of the low flood plain relief, stream velocities are not great in the present drainage ditches. No changes are anticipated in these velocities.

The fish ponds, however, would create a hazard in the area in that they would maintain permanent water at an average depth of 12 feet or greater, over at least 25 percent of the water surface and would have a fairly steep slope at the bank. This steepness of bank is required to prevent breeding of mosquitoes, and thus, any adverse impact on public health. The steepness would, however, present a hazard to small children and unwary adult non-swimmers.

6.6.3.4.5 Archaeological Sites

Ditching and other proposed improvements of the EQ Plan would not affect any of the 24 archaeological sites located in the area.

6.6.3.4.6 Historical Sites

No properties listed on or declared eligible to be on the National Register of Historic Structures Survey would be affected by the EQ Plan.

6.7 SYSTEM OF ACCOUNTS

The impacts of the EQ, NED, Recommended Plan and No Action Alternative are summarized in Table 11.

A - NO PROJECT ALTERNATIVE (1)

NO ACTION(1) (Base Condition)
LOCATION OF IMPACTS

Project Area	Totals
Blue Waters Ditch Basin	Rest of the Nation

ACCOUNTS

1. National Economic Development

a. Beneficial Impacts

(1) Value of increased output
of goods and services

(a) Flood damage reduction

Future gradual reduction in annual
damages, not quantified 3/ 6/ 9/Growth in national flood
losses gradually reduced
in future 3/ 6/ 9/Positive,
not quantified

(b) Land enhancement

None

None

None

(2) Value of output from use of
unemployed or underemployed
resources in constructionMinor gradual impact due to con-
struction of repaired and
relocated structure 3/ 5/ 9/

None

Positive,
not quantified

(3) Total NED Benefits

Positive

Positive

Positive, not quantified

b. Adverse Impacts

(1) Project costs-Flood damage
reductionAdministrative costs of National
Flood Insurance Program; plus net
cost of gradual repair and reloca-
tion of flood prone structures (not
quantified) 2/ 6/ 9/Administrative cost of
National Flood Insurance
Program 2/ 6/ 9/Administrative cost of
National Flood Insurance
Program, plus cost of
gradual repair and relo-
cation of flood prone
structures. Not
quantified 2/ 6/ 9/(2) Losses resulting from
external diseconomiesDisjointed community development;
increased cost of community
amenities 3/ 5/ 9/

None

Positive, not quantified
3/ 5/ 9/

Indeterminate

Indeterminate

Indeterminate

c. Net NED Benefits

2. Environmental Quality

a. Environmental Quality Enhanced

(1) Natural resources

None

None

None

(2) Pollution (Water Quality)

None

None

None

(3) Ecological systems and
biological resources

None

None

None

TABLE II - SYSTEM OF ACCOUNTS - IMPACTS BY ALTERNATIVES AND LOCATION

BLUE WATERS DITCH AREA

NED OPTIMUM PLAN				ENVIRONMENTAL QUALITY PLAN			
	LOCATION OF IMPACTS				LOCATION OF IMPACTS		
Totals	Project Area Blue Waters Ditch Basin	Rest of the Nation	Totals	Project Area Blue Waters Ditch Basin	Rest of the Nation	Totals	
\$968,000 2/ 6/ 9/	Indeterminate portion of local area	\$968,000 2/ 6/ 9/	\$968,000 2/ 6/ 9/	Indeterminate portion of local area	\$968,000 2/ 6/ 9/	\$968,000 2/ 6/ 9/	
Positive, not quantified	Positive, not quantified	Positive, not quantified	\$406,000 (fishing opportunities)	Positive, not quantified	\$406,000 (fishing opportunities)	\$406,000 (fishing opportunities)	
Positive, not quantified	None	Positive, not quantified	Positive, not quantified	None	Positive, not quantified	Positive, not quantified	
\$968,000	Indeterminate portion of local area	\$968,000	\$1,283,000	Indeterminate portion \$1,283,000 of local area	\$1,283,000	\$1,283,000	
NA	NA	\$717,000 2/ 6/ 9/	NA	NA	NA	\$1,477,000 2/ 6/ 9/	
None	None	None	None	None	None	None	
NA	NA	\$251,000	NA	NA	NA	-\$194,000	
Reduces commitment of natural resources for construction materials to repair or replace damaged property 2/ 6/ 9/	Reduces commitment of natural resources for construction materials to repair or replace damaged property 2/ 6/ 9/	Positive, not quantified	Reduces commitment of natural resources for construction materials to repair or replace damaged property 2/ 6/ 9/	Reduces commitment of natural resources for construction materials to repair or replace damaged property 2/ 6/ 9/	Positive, not quantified	Positive, not quantified	
Reduced sediment load and sedimentation in channels 2/ 6/ 9/	Insignificant	Positive, not quantified	Reduce sediment load and sedimentation in channels. Improved water quality due to detention time in ponds. 2/ 6/ 9/	Insignificant	Positive, not quantified	Positive, not quantified	
Not quantified	Not quantified	Not quantified	100 acres of wildlife habitat of increased quality created. 200 acres of fish habitat created. 10 acres of marsh preserved. 2/ 6/ 9/	Insignificant	Positive	Positive	

AND LOCATION

ENVIRONMENTAL QUALITY PLAN

SELECTED PLAN

560 cfs Pump Station Plus 6 Ponds and Wildlife Habitat Buffer
LOCATION OF IMPACTS600 cfs Pump Station Plus Wildlife Habitat Buffer
LOCATION OF IMPACTS

Project Area	Rest of the Nation	Totals
Blue Waters Ditch Basin		

Project Area	Rest of the Nation	Totals
Blue Waters Ditch Basin		

<u>6/ 9/</u>	\$968,000 <u>2/ 6/ 9/</u>	Indeterminate portion \$968,000 <u>2/ 6/ 9/</u> of local area	\$968,000 <u>2/ 6/ 9/</u>	Indeterminate portion \$968,000 <u>2/ 6/ 9/</u> of local area	
<u>ed</u>	\$406,000 (fishing opportunities)	Positive, not quantified	\$406,000 (fishing opportunities)	Positive, not quantified	Positive, not quantified
<u>fied</u>	Positive, not quantified	None	Positive, not quantified	Positive, not quantified	Positive, not quantified
	\$1,283,000	Indeterminate portion \$1,283,000 of local area	\$968,000	Indeterminate portion \$968,000 of local area	
<u>6/ 9/</u>	NA	NA	\$1,477,000 <u>2/ 6/ 9/</u>	\$142,500 <u>2/ 6/ 9/</u>	\$574,400 <u>2/ 6/ 9/</u> \$717,000 <u>2/ 6/ 9/</u>
	None	None	None	None	None
	NA	NA	-\$194,000	Indeterminate	Indeterminate \$251,000
<u>ng</u>	Reduces commitment of natural resources for construction materials to repair or replace damaged property <u>2/ 6/ 9/</u>	Reduces commitment of natural resources for construction materials to repair or replace damaged property <u>2/ 6/ 9/</u>	Positive, not quantified	Reduces commitment of natural resources for construction materials to repair or replace damaged property <u>2/ 6/ 9/</u>	Reduces commitment of natural resources for construction materials to repair or replace damaged property <u>2/ 6/ 9/</u> Positive, not quantified
<u>ed</u>	Reduce sediment load and sedimentation in channels. Improved water quality due to detention time in ponds. <u>2/ 6/ 9/</u>	Insignificant	Positive, not quantified	Reduced sediment load and sedimentation in channels <u>2/ 6/ 9/</u>	Insignificant Positive, not quantified
<u>ed</u>	100 acres of wildlife habitat of increased quality created. 200 acres of fish habitat created. 10 acres of marsh preserved. <u>2/ 6/ 9/</u>	Insignificant	Positive	49 acres of wildlife habitat created. New habitat of significantly better quality than existing habitat <u>2/ 6/ 9/</u>	Insignificant Positive

A - NO PROJECT ALTERNATIVE

(4) Land quality	None	None	None	Increases amount of land for agricultural reducing flooding 2/ 6/ 9/
b. Environmental Quality Degraded				
* (1) Pollution	None	None	None	Short-term,able increase in noise levels during construction
c. Environmental Quality Destroyed				
(1) Natural Resources	Destruction of natural resources for building materials to repair flood damaged property, raise structures in place and to flood proof new development. 1/ 6/ 9/ 10/	Destruction of natural resources for building materials to repair flood damaged property, raise structures in place and to flood proof new development. 1/ 6/ 9/ 10/	Positive, not quantified	Removal of earth, rock & granular construction materials 1/
(2) Ecological Systems and Biological Resources	None	None	None	Loss of 22 acres of terrestrial habitat 1/ 6
(3) Land Quality	None	None	None	32 acres of land degraded for use as site 1/ 6/ 9/
3. Social Well-Being				
a. Beneficial Impacts				
(1) Enhancement of health, safety, and community well-being				
(a) Health	Very minor reduction in interface between humans and disease aspects of flooded areas 3/ 5/ 9/	Insignificant	Positive, not quantified	Positive, no quantified
(b) Safety and community well-being	Gradually reduces susceptibility of community to direct impacts of flooding 1/ 6/ 9/	Insignificant	Positive, not quantified	Immediately & susceptible and anxiety
(2) Increases in the equity of distribution of real income	None	None	None	No measurable
(3) Educational, cultural, and recreation opportunities				
(a) Educational and cultural (archeology)	None	None	None	None
(b) Recreation	None	None	None	None

MED OPTIMUM PLAN

Increases suitability of land for urban and agricultural use by reducing flooding
None
Positive, not quantified
2/ 6/ 91

Short-term, controllable increase in turbidity, and short-term increase in dust and noise levels during construction
Insignificant
Positive, not quantified
1/ 6/ 91

17 acres of aquatic habitat and 23 acres of terrestrial land temporarily altered during construction
None
Positive
1/ 6/ 91

32 acres of agricultural land degraded temporarily for use as spoil area
None
Positive
1/ 6/ 91

Commitment of fuel, earth, rock and miscellaneous construction materials during construction
Commitment of fuel, earth, rock and miscellaneous construction materials during construction
1/ 6/ 91

Loss of 22 acres of terrestrial wildlife habitat
Insignificant
Positive
1/ 6/ 91

27 acres of agricultural land lost
Insignificant
Positive
1/ 6/ 91

Positive, not quantified
Positive, not quantified
Positive, not quantified

Immediately eliminates susceptibility to flooding and anxiety
Insignificant
Positive, not quantified
2/ 6/ 91

No measurable effect
No measurable effect
No measurable effect

None
None

None
None

OPTIMUM ALTERNATIVE PLAN

Increases suitability of land for urban and agricultural use by reducing flooding
Positive, not quantified
2/ 6/ 91

Short-term heavy increase in stream turbidity, dust and noise levels during construction
Positive, not quantified
1/ 6/ 91

6 acres of terrestrial land temporarily altered during construction
Positive
1/ 6/ 91

14 acres of terrestrial land degraded due to construction
Positive
1/ 6/ 91

Commitment of fuel for construction and some resources for construction materials
Commitment of fuel for construction and some resources for construction materials
1/ 6/ 91

15 acres of terrestrial land lost for channels
None
Positive
1/ 6/ 91

220 acres of agricultural land lost for ponds and channels
None
Positive
1/ 6/ 91

Positive, not quantified
Positive, not quantified
Positive, not quantified

Immediately reduces susceptibility to flooding and anxiety
Insignificant
Positive, not quantified
2/ 6/ 91

No measurable effect
No measurable effect
No measurable effect

Enhanced educational opportunities concerning the natural environment
None
Positive, not quantified
2/ 6/ 91

Improved opportunity for fishing and passive recreation
Insignificant
\$406,000
2/ 6/ 91

Increases suitability of land for urban and agricultural use by reducing flooding
2/ 6/ 91

Short-term heavy increase in stream turbidity, dust and noise levels during construction
1/ 6/ 91

6 acres of terrestrial habitat temporarily altered during construction
1/ 6/ 91

13 acres of agricultural land degraded due to construction
1/ 6/ 91

Commitment of fuel for construction and resources for construction materials
1/ 6/ 91

80 acres of terrestrial habitat lost
1/ 6/ 91

59 acres of agricultural land lost
1/ 6/ 91

Positive, not quantified
Positive, not quantified
Positive, not quantified

Immediately reduces susceptibility to flooding and anxiety
Insignificant
Positive, not quantified
2/ 6/ 91

No measurable effect
No measurable effect
No measurable effect

Positive, not quantified
Positive, not quantified
Positive, not quantified

Improved opportunity for passive recreation
Insignificant
\$406,000
2/ 6/ 91

Improve opportunity for passive recreation
2/ 6/ 91

ENVIRONMENTAL QUALITY PLAN

SELECTED PLAN

<u>Identified</u>	Increased suitability of land for urban and agricultural use by reducing flooding <u>1/ 6/ 97</u>	None	Positive, not quantified	Increases suitability of land for urban and agricultural use by reducing flooding <u>2/ 6/ 97</u>	None	Positive, not quantified
<u>Identified</u>	Short-term heavy increase in stream turbidity, dust and noise levels during construction <u>1/ 6/ 97</u>	Insignificant	Positive, not quantified	Short-term heavy increase in stream turbidity, dust and noise levels during construction <u>1/ 6/ 97</u>	Insignificant	Positive, not quantified
<u>Identified</u>	6 acres of terrestrial land temporarily altered during construction <u>1/ 6/ 97</u>	None	Positive	6 acres of terrestrial habitat temporarily altered during construction <u>1/ 6/ 97</u>	None	Positive
<u>Identified</u>	~5 acres of agricultural land degraded due to construction <u>1/ 6/ 97</u>	None	Positive	13 acres of agricultural land degraded due to construction <u>1/ 6/ 97</u>	None	Positive
<u>Identified</u>	Commitment of fuel for construction and some resources for construction materials <u>1/ 6/ 97</u>	Commitment of fuel for construction and some resources for construction materials <u>1/ 6/ 97</u>	Positive, not quantified	Commitment of fuel for construction and some resources for construction materials <u>1/ 6/ 97</u>	Commitment of fuel for construction and some resources for construction materials <u>1/ 6/ 97</u>	Positive, not quantified
<u>Identified</u>	15 acres of terrestrial land lost for channels <u>1/ 6/ 97</u>	None	Positive	80 acres of terrestrial habitat lost <u>1/ 6/ 97</u>	None	Positive
<u>Identified</u>	270 acres of agricultural land lost for ponds and channels <u>1/ 6/ 97</u>	None	Positive	59 acres of agricultural land lost <u>1/ 6/ 97</u>	None	Positive
<u>Identified</u>	Positive, not quantified	Insignificant	Positive, not quantified	Positive, not quantified	Insignificant	Positive, not quantified
<u>Identified</u>	Immediately reduces susceptibility to flooding and anxiety <u>2/ 6/ 97</u>	Insignificant	Positive, not quantified	Immediately reduces susceptibility to flooding and anxiety <u>2/ 6/ 97</u>	Insignificant	Positive, not quantified
<u>Unmeasurable effect</u>	No measurable effect	No measurable effect	No measurable effect	No measurable effect	No measurable effect	No measurable effect
<u>Unmeasurable effect</u>	Enhance educational opportunities concerning the natural environment <u>2/ 6/ 97</u>	None	Positive, not quantified	Positive, not quantified	Insignificant	Positive, not quantified
<u>Unmeasurable effect</u>	Improved opportunity for fishing and passive recreation <u>2/ 6/ 97</u> \$406,000	Insignificant \$406,000	\$406,000 <u>2/ 6/ 97</u>	Improve opportunity for passive recreation <u>2/ 6/ 97</u>	Insignificant	Positive, not quantified

A - NO PROJECT ALTERNATIVE

* <u>(4) Aesthetic values</u>	None	None	None	Improved aesthetics due to structures during stops 1/ 6/ 9
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b. Adverse Impacts

(1) Deterioration in the quality of life, health, and safety	Continued flooding will cause further deterioration in existing development 1/ 6/ 9/	None	Positive, not quantified	Safety hazard due to channels 1/ 6/ 9/
(2) Degraded education, cultural and recreational opportunities	Possible destruction of archeological sites by new development 3/ 6/ 10/	Insignificant	Positive, not quantified	None
(3) Injurious displacement of people and community disruption	Periodic disruption of community system and activities 1/ 6/ 9/	Insignificant	Positive, not quantified	No displacement term interruption local traffic and minor nuisance during construction 1/ 6/ 9/
(4) Aesthetic values	Degradation due to flooding of existing structures and future development 3/ 6/ 10/	None	Positive, not quantified	Short-term sediment during construction tends to degrade qualities downstream 1/ 6/ 9

c. Regional Development

a. Beneficial Impacts

(1) Value of increased income	None	None	None	Insignificant
(2) Quantity of increased employment	None	None	None	SO construction for 1-1/2 years 1/ 6/ 9/
(3) Desirable population distribution	None	None	None	Improves current of population intention to provide community services 1/ 6/ 9/
(4) Increased stability of regional economic growth	None	None	None	Positive. Approx 600 acres which made flood free accommodate regl growth

<u>Timing</u>	<u>Uncertainty</u>	<u>Exclusively</u>	<u>Actuality</u>
1/ Impact is expected to occur prior to or during implementation of plan	4/ The uncertainty associated with the impact is 50% or more	2/ Overlapping entry; fully monetized in NED account	9/ Impact will
2/ Impact is expected within 15 years following plan implementation	5/ The uncertainty is between 10% and 50%	3/ Overlapping entry; not fully mentioned in NED account	10/ Impact will additional during impl
3/ Impact is expected in a longer time frame (15 or more years following implementation)	6/ The uncertainty is less than 10%		11/ Impact will additional
(1) Without project conditions, assume adoption and enforcement of land use regulations pursuant to the Flood Disaster Prevention Act of 1973. (P.L. 93-236)			Section 122
*Items specific and ER 1105-2-			

MED OPTIMUM PLAN			ENVIRONMENTAL QUALITY PLAN		
soved as deterioration structures due to flood stops 2/ 6/ 9/	None	Positive, not quantified	Improved as deterioration of structures due to flooding stops and due to creation of ponds and habitat buffers 2/ 6/ 9/	None	Positive, not quantified
safety hazard due to tunnels 2/ 6/ 9/	None	Positive, not quantified	Safety hazard due to ponds and channels 2/ 6/ 9/	None	Positive, not quantified
displacement. Short- term interruption of local traffic and other minor nuisance during construction 1/ 6/ 9/	None	Positive, not quantified	No displacement. Short- term disruption of local traffic and other minor nuisance during construction 1/ 6/ 9/	None	Positive, not quantified
short-term sediment carrying construction would lead to degrade natural habitats downstream 1/ 6/ 9	Insignificant	Positive, not quantified	Short-term sediment carrying construction would tend to degrade natural habitats downstream 1/ 6/ 9/	Insignificant	Positive, not quantified
significant 10 construction jobs for 2-1/2 years 2/ 9/	Positive, not quantified	Positive, not quantified	Insignificant	Positive, not quantified	Positive, not quantified
improves concentration of population in relation to providing community services 1/ 6/ 9/	None	50 construction jobs for 1-1/2 years 1/ 6/ 9/	10 construction jobs for 1-1/2 years 1/ 6/ 9/	None	100 construction jobs for 1-1/2 years 1/ 6/ 9/
Positive. Approximately 100 acres which would be made flood free would accommodate regional growth	Positive. Approximately nearly 600 acres which would be made flood free would accommodate regional growth	Positive, not quantified	Improves concentration of population in relation to providing community services 1/ 6/ 9/	Improves concentration of population in relation to providing community services 1/ 6/ 9/	Improves concen- tration to provi- dence services 1/ 6/ 9/
stability			Reduced flood threat on otherwise non-developable land would accommodate minor increase in regional growth. Reduces inundation 10% of 100-yr frequency flood by approximately 100 acres 2/ 5/ 10	Reduced flood threat on otherwise non-developable land would accommodate minor increase in regional growth. Reduces inundation 10% of 100-yr frequency flood by approximately 100 acres 2/ 5/ 10	Reduced flood on otherwise non-developable land moderate minor regional growth inundation 1 100-yr frequen- cy approximat- ely 100 acres. 2/ 5

Impact will occur with implementation
Impact will occur only when specific
additional actions are carried out
during implementation.

Impact will not occur because necessary
additional actions are lacking.

Section 122

Items specifically required in Section 122
and ER 1105-2-105.

ENVIRONMENTAL QUALITY PLAN

SELECTED PLAN

Identified	Improved as deterioration of structures due to flooding stops and due to creation of ponds and habitat buffers 2/ 6/ 9/	None	Positive, not quantified	Improved as deterioration of structures due to flooding stops and due to creation of habitat buffers 2/ 6/ 9/	None	None
Identified	Safety hazard due to ponds and channels 2/ 6/ 9/	None	Positive, not quantified	Safety hazard due to channels 2/ 6/ 9/	None	Positive, not quantified
Identified	None	None	None	None	None	None
Identified	No displacement. Short-term disruption of local traffic and other minor nuisances during construction 1/ 6/ 9/	None	Positive, not quantified	No displacement. Short-term disruption of local traffic and other minor nuisances during construction 1/ 6/ 9/	None	Positive, not quantified
Identified	Short-term sedimentation during construction would tend to degrade natural qualities downstream 1/ 6/ 9/	Insignificant	Positive, not quantified	Short-term sedimentation during construction would tend to degrade natural qualities downstream 1/ 6/ 9/	Insignificant	Positive, not quantified
not identified	Insignificant	Positive, not quantified	Positive, not quantified	Insignificant	Positive, not quantified	Positive, not quantified
construction jobs years	100 construction jobs for 1-1/2 years 2/ 5/ 9/	None	100 construction jobs for 1-1/2 years 1/ 5/ 9/	50 construction jobs for 1-1/2 years 1/ 5/ 9/	None	50 construction jobs for 1-1/2 years 1/ 5/ 9/
Identified	Improves concentration of population in relation to providing community services 1/ 6/ 9/	Improves concentration of population in relation to providing community services 1/ 6/ 9/	Positive, not quantified	Improves concentration of population in relation to providing community services 1/ 6/ 9/	Improves concentration of population in relation to providing community services 1/ 6/ 9/	Positive, not quantified
Identified	Reduced flood threat on otherwise non-developable land would accommodate minor increase in regional growth. Reduces inundation limits of 100-yr frequency flood by approximately 600 acres 2/ 5/ 10/	Positive	Reduced flood threat on otherwise non-developable land would accommodate minor increase in regional growth. Reduces inundation limits of 100-yr frequency flood by approximately 600 acres 2/ 5/ 10/	Reduced flood threat on otherwise non-developable land would accommodate minor increase in regional growth. Reduces inundation limits of 100-yr frequency flood by approximately 600 acres 2/ 5/ 10/	Reduced flood threat Positive on otherwise non-developable land would accommodate minor increase in regional growth. Reduces inundation limits of 100-yr frequency flood by approximately 600 acres 2/ 5/ 10/	Reduced flood threat Positive on otherwise non-developable land would accommodate minor increase in regional growth. Reduces inundation limits of 100-yr frequency flood by approximately 600 acres 2/ 5/ 10/

7. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The Blue Waters area flood control project represents a commitment of 139 acres of land in drainage ditches, greenbelts and disposal of excavated material. Although a long-term commitment is anticipated, the project is not irreversible in that the permanent features of the project can be removed without great difficulty. While the physical character of the project can be removed, the effects of the project will be of an irreversible nature. The flood control aspects of the project will allow development of some agricultural and vacant land in the Blue Waters area. The increased flood protection will enhance the economic standard of living of those residents of the area over the short and long term.

The natural environment of the Blue Waters area has already been fundamentally altered by man's actions. Different valuations can be placed on what constitutes environmental quality; however, it cannot be questioned that the natural environment of the Blue Waters area has been markedly changed. Man has the capacity to contribute to the quality of the environment as well as degrade it, and in this respect, the project will provide a foundation upon which rational uses of the environment beneficial to man as well as other organisms can be planned. Specific measures have been incorporated into the project to preserve and enhance fish and wildlife habitat, both for the benefit and use of the present generation and future generations. Whether or not the ultimate long-term impact of the project is beneficial or detrimental to the environment will depend largely on the implementation of a wise land use policy by local governmental agencies.

8. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

Approximately, 139 acres of land will be utilized for drainage ditches, greenbelts, and disposal of excavated material. Although it is anticipated that this project will be of a permanent nature, it is neither irreversible or irretrievable. The impact of increased urbanization will be of a permanent nature, and therefore, this impact can, for all practical purposes, be considered irreversible.

The total monetary commitment involved in this project is \$10,675,000. Upon project completion, this will be an irretrievable commitment of resources. Fuel for construction and some resources for construction materials will also be committed.

9. COORDINATION WITH OTHERS

9.1 PUBLIC PARTICIPATION

In the Blue Waters Ditch project, informed public involvement and decision making played an important role in the plan selection. To facilitate public involvement, a three level public participation program was developed. Throughout this program, an emphasis was placed on providing alternatives from which an acceptable plan was formulated.

9.1.1 PUBLIC INVOLVEMENT - FIRST LEVEL

The first level of this public participation program consisted of regional organizations which were concerned and had responsibility for water resources within a geographical area that was larger than Blue Waters Ditch area. These groups were formed into an organization referred to as the Guidance Committee. Members of the committee included the State of Illinois Division of Waterways, East-West Gateway Coordinating Council, Southwestern Illinois Metropolitan Area Planning Commission, St. Clair County Board, East Side Levee and Sanitary District, and the St. Louis District, Corps of Engineers. This committee met at regular intervals to discuss problems and needs of the area, review the technical alternatives, suggest modifications to these alternatives, and provide an advocate group of organizations to implement the selected plan of improvement. In a series of meetings, this group considered and helped finalize a plan of improvement for Blue Waters Ditch area. The plan is one of interior protection by both traditional-structural measures (improved and new channels and a new pumping station) and non-structural measures (regulation and/or public acquisition of natural storage areas). During the latter part of the planning process, intensive coordination with the Division of Waterways and Governor's Task Force on Flood Control identified options within the interior protection alternative which afforded the potential for significant Federal and non-Federal cost savings.

9.1.2 PUBLIC INVOLVEMENT-SECOND LEVEL

The second level of the public involvement program was conducted with local governmental units under whose jurisdiction the Blue Waters Ditch design area lies. These governments are the Villages of Cahokia, Centreville, Alorton, and Sauget, the City of East St. Louis, Centreville Township, and St. Clair County. Meetings with concerned public officials were held on several occasions, and may be divided into two periods. The first period of meetings were held for the purposes of identifying problems and needs relating to water and surrounding land uses in the Blue Waters area, as well as soliciting public input on measures to implement solutions to these needs. The second period of meetings was held for the purpose of review of technical alternatives which had been prepared and

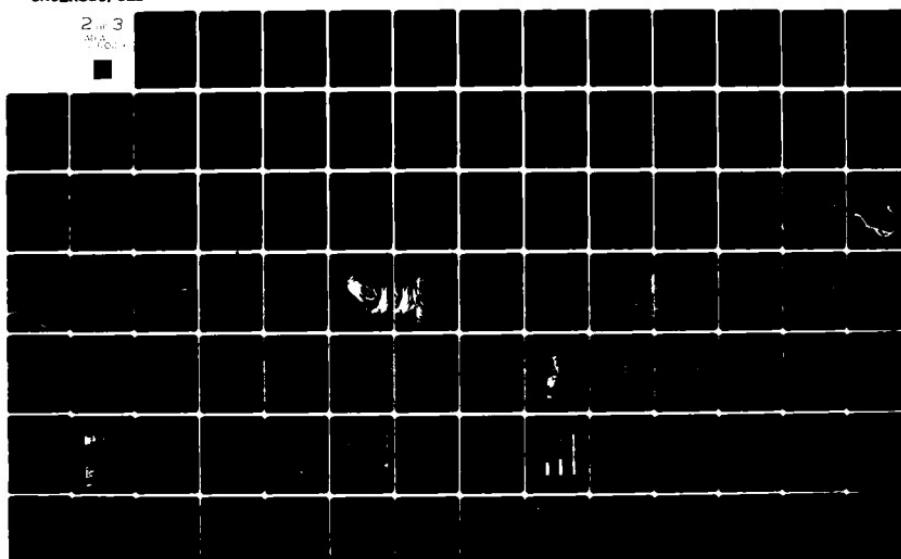
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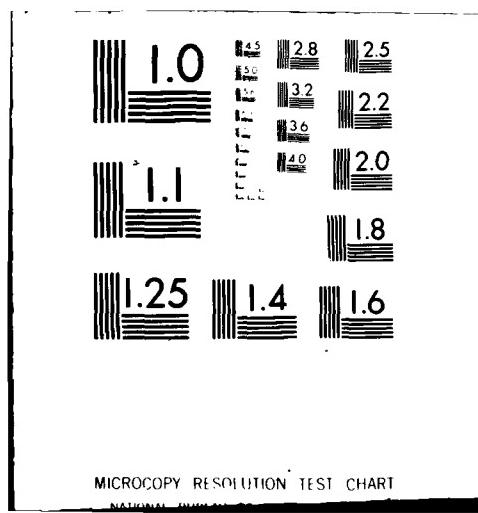
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analyzed by the St. Louis District, reviewed by the first level of public involvement, i.e., the Guidance Committee, and modified to account for individual community desires. Subsequent to the second period of community level discussions, a public meeting was then held to involve all three levels of the public participation program.

9.1.3 SPECIAL INTERESTS - THIRD LEVEL

The third level of the public involvement program was conducted with individual citizens, organizations, and special interests who were concerned about water resources management in the Blue Waters Ditch design area. In order to establish a medium for communication with a large number of people in the third level, a series of brochures, news releases, and ultimately a public meeting were achieved. This was done both to inform the various publics about needs and potential alternative solutions, but to also actively encourage their input into the planning process. Brochures and selected news articles, which were a part of this level of involvement, are documented in Blue Waters Ditch Improvements, Design Memorandum Number 1, Part A, Appendix A. The third level of public involvement was culminated with a public meeting held within the Blue Waters area on 7 March 1973. The text from this meeting is also shown in Appendix A. Based on prepared statements at this meeting and after accommodating more modifications to the alternatives, it appeared from the meeting that all interests had been given full and adequate opportunity to express their desires as regarding alternatives for water resource management in the area.

In addition to the work already accomplished in terms of public involvement of the Blue Waters portion of the East St. Louis and Vicinity Interior Flood Control Project, ongoing coordination is being conducted to assure that continued support and implementation of necessary improvements are accomplished. Members of the Southwestern Illinois Metropolitan Area Planning Commission, Village of Cahokia Planning Commission, and the St. Louis District met to discuss alternatives to flood plain management within the Village of Cahokia. Productive discussion has led to the formulation of a plan for developing a flood plain management program in Cahokia.

9.2 GOVERNMENT AGENCIES

During the development stages, the plan was coordinated with the following Federal and State agencies: the U.S. Department of Agriculture, Soil Conservation Service, St. Clair County Soil Conservation District; U.S. Department of Housing and Urban Development, Chicago Area Office; U.S. Department of the Interior, Bureau of Outdoor Recreation, National Park Service and Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife; Environmental Protection Agency, Region 5; State of Illinois, Department of Conservation, Department of Transportation, Environmental Protection Agency, and Water Survey.

9.3 COORDINATION OF THE DRAFT ENVIRONMENTAL STATEMENT

The Draft Environmental Statement for East St. Louis and Vicinity, Illinois, Blue Waters Ditch Improvements was coordinated with appropriate Federal and State agencies, local communities, organizations, and interested individuals in March 1974 for review purposes in compliance with the National Environmental Policy Act of 1969. However, due to a complex combination of circumstances, the draft statement was never recorded with the Council on Environmental Quality and, subsequently, its official notice of availability was not published in the Federal Register before its release to the public.

In April 1975, the U.S. Army Corps of Engineers District, St. Louis, proceeded to officially record, with minor changes, the draft environmental statement with the Council on Environmental Quality and thereafter its official notice of availability appeared in the 18 April 1975 publication of the Federal Register. At that time a package of addendum pages was sent out to all parties which had received a copy of the unofficial draft statement. Recipients of the addendum pages were asked to review the project changes as identified and, if required, alter their original letter of comment in order to update their input into the environmental statement. The comments which were received as a result of both of the above-described reviews, are addressed in parts 9.3.1 and 9.3.2 below. Copies of the letters of comment received during these coordination efforts are contained in Appendices D and E of this final environmental statement.

Since the 1975 plan as reported in the draft environmental statement has been replaced with a new recommended plan, the comments and responses contained in this section are in many instances no longer pertinent.

9.3.1 REVIEW COMMENTS AND RESPONSES FROM MARCH 1974 COORDINATION

a. United States Environmental Protection Agency

Comment 1: In response to your letter of March 14, 1974, we have reviewed the Draft Environmental Impact Statement (EIS) and the supporting environmental inventory for the Blue Waters Ditch Improvements, East St. Louis and Vicinity, Illinois. We have classified our comments as Category ER-2. Specifically, this means we have reservations about the impacts of the proposal, particularly concerning secondary impacts. We believe secondary impacts should be discussed in more detail and further consideration should be given to implementing the alternative of relocation and zoning. This classification and the date of our comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on Federal actions under Section 309 of the Clean Air Act. We offer the following comments:

Response: Comment noted. Responses to the comments summarized in this paragraph are provided for the specific comments which follow.

Comment 2: The EIS and supporting environmental inventory provide a well-balanced and well-documented report on the Blue Waters area. While the proposed ditching and pumping of flood waters will make it possible for flood waters to be reduced, thus providing limited benefits to residents, the project directs the ultimate future of the area towards further development. The EIS should address the question of encouraging further development in an area with strong natural constraints against it.

Response: As addressed in Section 3-III-C-1 of the Draft Environmental Statement, the urbanization of a flood plain is a controversial issue, having substantial backing of both proponents and opponents. Section 3-III-C-3 states that the proposed project will remove 1,000 acres of naturally low land from possible future development by use of land use zoning. Finally, Section 3-III-C-1 points out that the proposed project will encourage development in areas which are poorly drained at present.

Comment 3: Considering the levels of air and noise pollution presently found in the project area and the overall quality of life that many of the residents experience, the relocation of the flood stricken residents may have considerable merit. The alternative of relocation and zoning appears in many respects to be a more desirable course of action. The adverse social impacts appear to discourage this course of action; however, the EIS does not consider measures to minimize these adverse impacts. The Final EIS should include potential measures that could be utilized to minimize adverse effects resulting from the selection of this alternative.

Response: Since the project has undergone substantial reformulation, the relocation alternatives would appear to have considerably less merit than the proposed project. As noted in Section 6.2 of this final statement, both relocation alternatives are more expensive than the proposed plan; both entail the relocation of substantial numbers of structures; and both have substantial negative social impacts. These considerations preclude presentation of what

would be a superfluous discussion of possible mitigative strategies to minimize adverse social impacts resulting from the relocation alternatives.

Comment 4: Adverse social impacts associated with the proposed action should be addressed. By providing adequate drainage in the project area for residential and industrial development, the existing characteristics of the area will change considerably. Many of the present residents may be displaced regardless of efforts not to relocate them as land values shift upward. Thus, the proposed project may be the first step in a sequence of events that will ultimately lead to relocation. A detailed discussion relating to long-term productivity should be provided for the proposed action and the relocation zoning alternative. This discussion should include consideration of secondary impacts.

Response: The adverse social impacts that would result from the proposed project were outlined in Section 4-II-B of the Draft Environmental Statement. These impacts are totally in the area of land use and are definable as: increased development, agricultural land, restriction of development, and project requirements. However, it should be noted that there are legitimate differences of opinion regarding both the definition of the term adverse and the effects of various environmental impacts.

As cited in Section 3-III-C-1 of the Draft Environmental Statement, the proposed project will encourage development in presently poorly drained areas. Such development is expected to be largely residential, but may also include commercial and industrial pursuits. Additional development would displace land presently in agricultural production. However, the area is already substantially urbanized with agriculture existing in off-road back areas. Also, it is doubtful that large scale development would take place. Thus, the character of the area would not be changed considerably.

The upward shift of land value (i.e., land rent) would be the cause of the aforementioned displacement of agricultural activities. Other activities,

i.e., residential, et al, are usually of sufficient value to absorb such an increase. For this reason, farmers of the area would probably be forced to relocate to a greater degree than urban-residents as a result of increased land values. At this time, the process of displacement-relocation is not seen to be the beginning of a sequence of events causing further relocation.

Due to the fact that the actions of the proposed project are not irreversible in that the permanent features of the project can be removed without great difficulty, the existing discussion on long-term productivity should suffice.

Comment 5: Because the relocation/zoning alternate appears to be a viable and effective approach to the problem consistent with Executive Order 11296, we believe that the Final EIS should address it in considerably more detail. Additional information should be provided on the conditions of the housing subject to flooding, market values, and the number of residences that could be considered substandard. Representative photographs depicting some of the residences that would be required to relocate (if the relocation alternative were to be implemented) should be provided.

Response: Due to the social costs involved and the support given to the proposed project by local interests and the State of Illinois, the Relocation and Zoning Alternative is not as viable as might appear. The proposed project is simpler and offers equal relief to the entire Blue Waters area. The information on housing quality, etc. sought in your comment is contained in Appendix A and Appendix B, which accompanied the Draft Environmental Statement, albeit not by exact site.

b. United States Department of the Interior

Comment 1: This draft statement does not adequately describe the existing environment of the project area particularly as it pertains to fish and wildlife resources. The first sentence on page 68 states that biological impacts are expected to be minimal, since little of the natural environment remains. However, we would like to point out that any habitat which still exists in an urbanized area becomes relatively more significant and thus should merit serious discussion and quantification in the environmental statement.

Response: The sentence in question has been omitted and replaced by a more detailed statement pertaining to the evaluation of the project impacts as they relate to the remaining natural areas.

Comment 2: We question, too, whether the intent of the Fish and Wildlife Coordination Act has been reflected in project formulation. The Act not only calls for the conservation of wildlife resources by preventing damages, but also provides for their development and improvement. The floodwater detention areas proposed for the East St. Louis and Vicinity project will degrade about 2,000 acres of wetlands. Yet, no permanent surface water will be established in these detention areas to offset project-caused losses of fish and wildlife habitat.

Response: The Fish and Wildlife Coordination Act calls for the conservation of fish and wildlife resources inasmuch as long as these conservation measures remain consistent with the authorized project purpose. The District has reevaluated the authorized plan and recommended a more comprehensive proposed plan of improvement which takes fish and wildlife concerns into further consideration.

The floodwater detention areas will be left in their existing condition. These areas are natural detention areas which have been designated as needing protection from development so as to fully utilize their existing ponding capabilities and avoid any further encroachment on them. As proposed, the project will not have any degrading effect on these areas.

Comment 3: Land acreage associated with the Goose Lake and Blue Waters detention areas alone totals 850 acres. These areas currently contain a large portion of the remaining wetlands in the project area and, according to page 68 of the statement, will be preserved as agricultural open space, which we assume to be "cropland".

Response: The term in question should have read agricultural-open space instead of agricultural open space. The difference being that these areas would be set aside for use as cropland and open space areas and not just for cropland. This error has been corrected in the final statement.

Comment 4: Moreover, it is possible that this project will give the local sponsors the opportunity to drain the entire Blue Waters area with no planning agency safeguards built in to protect wildlife values. Considering that there is a limited amount of permanent surface water in the Blue Waters area and that there is a recognized regional need for recreation, wildlife, and related activities, we believe that the following features would preserve fish and wildlife values in the project area:

- (1) Permanent water storage could be provided in the Blue Waters and Goose Lake detention areas. This could be developed behind the proposed pumping station. Silt could be prevented from accumulating in these pools by trapping it in the ditches for subsequent disposal off the floodplain in non-wetland areas.
- (2) Existing stands of trees could be preserved wherever possible. This could be accomplished by re-routing ditches if necessary. Trees could be left standing in the detention areas. As can be seen in the maps provided, ~~forest habitat is at a premium in the Blue Waters area and most either lies in the path of an improved ditch or in flood detention areas.~~
- (3) The local sponsor could be required to preserve wildlife values in the project area, avoiding indiscriminate clearing and burning along the ditches during annual maintenance. The ditch banks could be allowed to return to natural vegetation or planted with suitable wildlife cover.
- (4) The Corps could encourage local participation in cost sharing programs to enhance wildlife values wherever possible.

Response: Comment noted. The proposed project has incorporated fish and wildlife considerations, such as identified, to the degree that is considered consistent with the overall project purpose.

Comment 5: Although the need for general recreational facilities is apparent, the statement only alludes to this need and does not adequately discuss the subject. Recreation can and should be an integral part of this project. Such specific uses as trails and parks, should be related to the project and the impacts of such development on the overall environmental setting should be discussed.

Response: The project area's need for recreation facilities and the potential for satisfying these needs with features related to the project were recognized in the early planning stages and became a central part of the project design. Unfortunately, the plans were dropped when no local interest would support the cost of standard maintenance. However, the potential for the development of recreation facilities in relation to the project remains should a sponsor be found. The impact on outdoor recreation was pointed out in Section 3-D of the Draft Environmental Statement.

Comment 6: The project will have no foreseeable environmental impact on the mineral resources of the area, although the environmental statement should include the material on minerals from page II-7 of the environmental inventory report.

Response: The information identified has been included in the text of the final statement.

Comment 7: Page 10 indicates that increased degradation to land and water habitat is occurring. The statement should indicate that the land use changes which are destroying habitat have in part resulted from the security afforded by early flood protection works along the Mississippi River and will be accelerated by the proposed project in areas not needed for flood control purposes.

Response: The relationship of flood protection influencing land use and thus aiding the degradation of wildlife habitat is acknowledged. This relationship can be seen not only in urban areas where development displaces habitat but also in rural areas where agriculture takes place where it normally could not without benefit of flood protection. The possible impact of the proposed project contributing to the development of habitat areas not needed for natural detention was discussed in Section 3-II of the Draft Environmental Statement and reappears in the Final Environmental Statement (Section 4.).

Comment 8: Recreation correctly assesses the latent demand for outdoor recreation facilities in the area, we suggest that this paragraph be amended to discuss the need for increased opportunities for consumptive and non-consumptive wildlife uses.

Response: The reviewer is referred to the discussion of sport fish and wildlife values which is presented in Part 2.2.3.

Comment 9: D. The Proposed Plan of Improvement.

2. Ditches, bridges, and culverts. In the discussion of the proposed ditches, it would be helpful to the reviewer if the average water depths in the "improved ditches" were given. This section should be expanded to include a description of existing ditches to be modified by the project.

Response: Detailed information pertaining to design criteria for ditching and flow characteristics is presented in the General Design Memorandum which is available for review in the St. Louis District Office. The summary information presented in this environmental statement is considered adequate at its present level of detail.

Comment 10: Four new bridges across drainage ditches are proposed at the present site of the Triple Lake Road culvert, the State Highway #157 culvert, the Jerome Lane culvert, and the Illinois Central Railroad culvert (page 13). However, the only information provided on these bridges is their approximate locations. It would be advisable to include in the environmental statement information on the foundation conditions and general size and design of the principal bridges.

Response: Detailed information pertaining to foundation conditions and structural design criteria is presented in General Design Memorandum which is available for review in the St. Louis District Office. The summary information presented in this environmental statement is considered adequate at its present level of detail.

Comment 11: PART TWO: ENVIRONMENTAL SETTING WITHOUT THE PROJECT

I. PHYSICAL ENVIRONMENT

E. Hydrological Elements.

1. Existing surface water. The section states that at present there is a limited amount of permanent surface water in the area (page 24). We suggest the section be revised to include a listing of surface water features with acreages and average depths included.

Response: The reviewer is referred to the responses to comments 9 and 10.

Comment 12: This section on page 26 states poor water quality will preclude swimming in the Blue Waters area, which implies excessively high fecal coliform levels. We suggest that the source of this contamination be addressed. Is it agricultural runoff or municipal sewage? It appears that the U. S. Environmental Protection Agency will declare levee and drainage district pumping stations as point-source discharges of waste water. If this is the case, the coliform levels would have to be reduced before discharged to the Mississippi River. Therefore, it would be more beneficial to treat the water at the source and thereby allow for an increased recreational potential. We suggest expanding the section to address this point.

Response. The nature of the water quality sampling program conducted was not at the level of detail which would establish sources of contamination. The District concurs in the concern expressed in this comment, but feels that the information as presented is adequate.

Comment 13: II. BIOLOGICAL ELEMENTS

A. Introduction. While we agree, man's influence has had considerable adverse impact on the wildlife habitat base in the Blue Waters area (page 29), this only serves to make remaining habitat more valuable. We suggest that this point be brought out in the introduction.

Response: The reader is referred to the District's response to Comment #1 of this letter. This type of a discussion of value judgments is properly included in the impact section.

Comment 14: B. Biological Communities.

a. Present habitat types. In general, the discussion of existing habitat types on pages 30 through 33 is adequate; however, we suggest that the total acreage of each habitat type be provided. This should not be difficult because it appears that some of the information is contained in the "Environmental Report".

Response: Concur. The approximate acreages have been added to the referred discussion.

Comment 15: III. SOCIO-CULTURAL ENVIRONMENT

D. Land Use.

3. Agriculture.

b. Farm operators. Page 55 points out that transportation improvements such as Illinois I-55 and the Columbia-Waterloo Airport, plus related urban expansion are instrumental in the on-going de-agriculturalization of the area. We believe that flood control works, particularly in urban areas, also play a major role in influencing land use change. In areas of urban expansion, as the farm land acreages decrease, so do wildlife populations. The paragraph should point out that flood control projects are at least as important in influencing land use patterns as the proposed transportation developments.

Response: As presented in its entire context from the Draft Environmental Statement (Section 2-III-D-3), the thought that the de-agriculturalization of the study area would be quickened by the proposed transportation improvements to the study area (Interstate 255 and the Columbia-Waterloo airport) were the opinions gathered in interviews with farmers in the Blue Waters area. Furthermore, due to the high land tenancy rate, as opposed to ownership, the farmers recognized that they were vulnerable to losing their land (sic) to development and viewed the highway and airport as the major threats. In no way should the section be interpreted as a discussion of impacts. Rather, it was developed as a detailed profile of farming in the study area, resulting from recognition by the St. Louis District that any project in the area would effect farmers as well as urban dwellers.

The fact that flood control projects may influence land use patterns is acknowledged. The possible impacts by the proposed on land use patterns appeared in the Draft Environmental Statement (Section III-C) and reappear in the Final Environmental Statement (Section 4.3.3).

Comment 16: PART THREE: ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

I. IMPACT ON PHYSICAL ASPECTS OF THE ENVIRONMENT

A. Impact of Construction. Apparently environmental protection provisions will be incorporated, such as prevention of unnecessary damage to trees (page 66). We suggest that all existing tree stands be left undisturbed, particularly those along ditches and in the proposed detention areas. These trees will provide shade along the ditches and cover for some wildlife species. Stands in the detention areas, if permanently flooded, provide excellent cover and feeding areas for fish. If not flooded, they will provide wildlife habitat and aesthetic appeal.

Response: Comment noted. The District concurs in this philosophy and wherever possible will make every effort to adhere to it. However, where the existence of these habitat areas are under the control of the local landowners the District has not acquired local assurances to the extent identified.

Comment 17: B. Impact of the Project. This section on page 66 should quantify the impact on the habitat types previously described under the "Environmental Setting Without the Project". It states that the project would destroy some existing, low-lying, poorly drained, often flood-prone land forms which have disconnected drainage patterns. If these "land forms" are wetlands, we suggest typing them by criteria provided in Bureau of Sport Fisheries and Wildlife's Circular 39, "Wetlands of the United States" and enumerating the loss.

Response: The referenced "land forms" are not considered "wetlands" as defined in the Bureau of Sport Fisheries and Wildlife Circular 39, "Wetlands of the United States", in that these ponding areas are of such a temporary nature that the moist-soil plant communities characteristic of wetlands do not become established. As soon as these areas can be formed they are planted to agricultural crops.

Comment 18: The only reference to disposition of spoils appears to be the mention of "mounding the earthwork spoil areas". However, no information has been provided on the approximate total volume of material to be excavated from the 15 miles of proposed channel improvement, on the planned method of disposition of this material, or on the location of the spoil areas referred to above. We suggest that this information be included in the final statement.

Response: The reviewer is referred to Part 4.1.1 for clarification of the sentence in question. Detailed channel design information and details are presented in the General Design Memorandum which is available for review at the St. Louis District Office.

Comment 19: PART FOUR: ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

This section should include a discussion of the number of acres of wildlife habitat, of each type, which will be destroyed compared with what will replace it--in effect, determining the net loss.

Response: The actual number of acres lost or gained by habitat type has not been determined. As the Department is well aware, the number of acres lost or gained is not indicative of the values involved in habitat evaluation. To date, no such evaluation has been done by either the District or the U. S. Fish and Wildlife Service.

Comment 20: PART FIVE: ALTERNATIVES TO THE PROPOSED ACTION

From a fish and wildlife standpoint, we are concerned over the elimination of the relocation alternative. We cannot agree that moving 65 families is a massive relocation project. In an urban area the size of metropolitan St. Louis, would an additional 65 families really have an urbanization effect? If 65 relocations is considered massive, under what circumstances would this alternative ever be considered? We wish to point out that residential development is not always a desirable use of the floodplain, and encouraging this development at the expense of wildlife habitat is even less desirable when economically feasible alternatives exist.

Response: Subsequent reformulation of the project indicates that the cost of either relocation alternative presented in Section 6.2 of the final environmental statement is substantially greater than the cost of the proposed project. Much of this increase in cost comes from the greater number of structures which would have to be moved or floodproofed than the 65 relocations and 1500 floodproofed structures reported in the draft environmental statement.

Comment 21: PART SIX: THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY and PART SEVEN: ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

The number of acres of land required for the ditches should be made consistent, as it is given as 100 acres on page 87 but as 150 acres on page 88.

Response: This error has been corrected in the final statement.

c. Advisory Council On Historic Preservation

Comment 1: This is in response to your request of March 14, 1974, for comments on the environmental statement for the proposed Blue Waters Ditch Improvement, East St. Louis and Vicinity, Illinois. Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Advisory Council on Historic Preservation has determined that while you have discussed the historical, architectural, and archeological aspects related to the undertaking, the Advisory Council needs additional information to adequately evaluate the effects on these cultural resources. Please furnish additional data indicating:

Compliance with Executive Order 11593 of May 13, 1971.

1. In the case of land under the control or jurisdiction of the Federal Government, a statement should be made as to whether or not the proposed undertaking will result in the transfer, sale, demolition, or substantial alteration of potential National Register properties. If such is the case, the nature of the effect should be clearly indicated.
2. In the case of lands not under the control or jurisdiction of the Federal Government, a statement should be made as to whether or not the proposed undertaking will contribute to the preservation and enhancement of non-federally owned districts, sites, buildings, structures, and objects of historical, archeological, architectural, or cultural significance.

Response: The project will have no effect on any properties now in or eligible for the National Register of Historic Places.

Comment 2: To insure a comprehensive review of historical, cultural, archeological, and architectural resources, the Advisory Council suggests that the environmental statement contain evidence of contact with the appropriate State Historic Preservation Officer and that a copy of his comments concerning the effects of the undertaking upon these resources be included in the environmental statement. The State Historic Preservation Officer for Illinois is Mr. Anthony T. Deam, Director, Department of Conservation, 102 State Office Building, 400 South Spring Street, Springfield, Illinois 62706.

Response: As indicated in the statement of the cultural resources in the Blue Waters Area, six archeological sites have been identified as having the potential for being disturbed. Archeological excavations are scheduled for the most significant sites. These excavations are being coordinated with the National Park Service, Southern Illinois University - Edwardsville, and the Illinois Archeological Survey.

d. United States Department of Agriculture Forest Service

Comment 1: As you know, the interest of this agency centers largely in the impact of the proposal on forested or tree-covered areas. We found only one reference to impact on these areas, under the heading "Impact on Biological Aspects of the Environment": "Vacant or undeveloped areas such as old fields or the remaining patches of forest land may become developed because of improved drainage, and thus further loss of the area's already restricted terrestrial habitats may occur."

Response: Comment noted.

Comment 2: Figures 17 and 18 also give clues to the probable fate of several of the remaining patches of forest land. Occurring as they do within proposed natural detention areas, we assume they will be killed by inundation. It would seem appropriate for the draft to address this impact.

Response: The patches of forest land shown in Figures 17 and 18 will not be inundated anymore than they are already without the project. These areas were selected as natural detention areas because they are naturally occurring low areas which characteristically hold runoff at the present. No additional runoff will be directed or added to these detention areas.

Comment 3: Dr. Kulfinski's concluding paragraph, and particularly his concluding sentence in Section IX of Part A of the Environmental Inventory Report is a good summary of the values at stake. His discussion of 16 forest stands studied is keyed to Figure IX-1 which we do not find in the Report, and conversely, Plate 9 in the Draft shows the numbered stands, with no reference to them in the Draft.

Response: Dr. Kulfinski's report was included as part of the environmental statement as an appendix for technical data purposes and is properly addressed in that manner. Plate 9 is referenced in the introduction of biological elements under Part 2 of this final statement.

Comment 4: We also note that the Report states: "...there is a surprising amount of utilization of the 'waste lands'... for recreational hunting ... by residents of the area. This kind of recreation is of considerable value to people who live in an urban area and is perhaps unusual in being available to people that we often think of as disadvantaged. We would think that preservation of this kind of recreation ought to be a consideration in any further modification of the area." We agree with these statements, we believe that the remaining patches of forest land provide some of these values, and we think that the Draft should incorporate some of this philosophy.

Response: The reader is referred to the discussion pertaining to sport fish and wildlife as presented in the biological section of Part 2 of this final statement.

Comment 5: As disinterested parties, in reading the discussion of the Relocation and Zoning Alternative, it seems to us that this alternative deserves further serious consideration.

Response: As developed in Part 5.2, the Relocation and Zoning Alternative has several social costs, i.e., relocation of 65 families to places outside of the study area, a disruption of social life and services in the effected communities due to the loss of the people, and stresses on land outside of the flood plain due to the enforced emigration of displaced persons to these areas. These adverse impacts are judged to be of major magnitude and thus preclude further consideration of the subject alternative.

e. United States Department of Agriculture Soil Conservation Service

Comment 1: We have included a few editorial comments relating to the Environmental Inventory Reports, Part A and B, for your use and information.

Environmental Inventory Report-Part A

Page II-19 - "2. Silty Loam" should read "Silt Loam."

Page A-5 - "Silty Loam" should read "Silt Loam."

Page A-5 - "Bowore" should read "Bowdre."

Page A-5 - Sunbury and Maumee soil series should be deleted as they are not in this area.

Page A-14 - Section entitled "Residential, Commercial, and Light Industrial Development with Public Sewers" - Suggest it read as follows:

Residential,	<u>Severe:</u> Subject to flooding;
Commercial, and	These are soils of good supporting
Light Industrial	strength but range from low to
Development with	moderate in available moisture for
Public Sewers	plants.

Environmental Inventory Report-Part B

Figure 11-11 - Under legend "Silty Loam" should read "Silt Loam."

Response: Comment noted. The inventory reports referred to have not been reproduced as appendices for the final statement. Your editorial comments on these reports are appreciated and will be filed with our master copies for future processing.

Comment 2: Page 23, D. Soils, 1. American Bottoms, line 4 - suggest it read "and swale terrain, contain fine sandy loam or silt loam soils. The silt..."

Page 24, line 4 - change the word "silty" to "silt."

Page 24, line 5 - suggest deleting the sentence which reads "As Plate 8 indicates, the soils, with appropriate management, are good for agriculture, though they do present limitations for urban use." The plate does not indicate interpretations for agriculture or urban use. Actually the plate indicates soil surface textures. You may wish to change the title "Soils" to "Soil Surface Textures" or other appropriate title.

Response: The final statement has been changed to reflect the suggested terminology changes. The discussion of Plate 8 has been clarified to further indicate its purpose.

Comment 3: Drainage is a major benefit. From all indications the proposed project will permit installation of additional land treatment drainage systems for agricultural land but no mention of the need for drainage field ditches to utilize the improved outlets.

Response: Concur. The need for secondary drainage field ditches has been identified in Part 4.1.1 of the final statement.

Comment 4: If you have questions relating to the soils, soil interpretations, fertilization, vegetation, woody plantings, borrow area development, erosion control, drainage or any soil and water conservation practice, don't hesitate to get in touch with John F. Harryman, District Conservationist, Soil Conservation Service, 415 East Main Street, Belleville, Illinois 62220, telephone 618 233-5577 or Dale R. Sherrard, District Conservationist, Soil Conservation Service, P.O. Box 482, Route #1, Old Alton Road, Edwardsville, Illinois 62025, Telephone 618-656-4710.

Reponse: Comment noted. The availability of your agency's expertise is appreciated.

f. Department of Transportation, United States Coast Guard

Comment 1: "It is difficult to determine the potential impact of the Corps of Engineers proposed Blue Waters Ditch Improvements on Federally-aided highway programs in that area. Although the I-255 route was approved for a location which passes more or less through the middle of the Corps study area, the studies of I-255 are not complete. However, we believe that all necessary work on I-255 and proposed Federally-aided highway improvements in the area can be coordinated with the Corps proposal.

Response: Comment noted. The Corps will make every effort to see that the design and development of this project is fully coordinated with all responsible parties.

Comment 2: "We are concerned with the statement of the effect that may occur to groundwater levels (page 67, Groundwater). Sewer construction associated with highway projects often encounters high water tables in the flood plains near East St. Louis. If water tables are to fluctuate considerably as a result of the Corps' project, the difficulty in estimating construction costs for any sewer system will be increased. Maintenance of the sewer systems will also be more difficult as well as more costly.

Response: Additional investigations have indicated that the project will have no significant effect on the changes in groundwater level trends. The groundwater discussion in the final statement has been amended to accurately describe the impacts that the project will have on groundwater levels.

Comment 3: "Probably more important than these effects on ground water and sewer systems is the potential for increased health hazard (see Health, p. 47; Pest Species, item 1, page 35). Hepatitis and/or other vector transmitted diseases associated with water contamination and water ponding appear to have a potential for increase, as the Corps has stated the possible adverse effects. It might be well to comment on what public health impacts can be expected if no flood control program is undertaken."

Response: Comment noted. The District feels that the discussion as referenced in the draft statement presents an accurate description of the potential health hazards associated with the project area.

Comment 4: We have no other comments to offer nor do we have any objection to the project. However, the concern of the Federal Highway Administration should be addressed in the final statement.

Response: Comment noted. The Federal Highway Administration did not offer any comments on this project during the review period set for the draft statement. However, they will have a second opportunity to comment on this proposed project upon receipt of this final statement.

g. Federal Power Commission

Comment 1: The staff review indicates that construction of the Blue Waters Ditch project would not affect any bulk electric power or natural gas pipeline facilities under the jurisdiction of the Federal Power Commission. Also, the project would not appear to have any significant effect on the development of future supplies and transmission of electric power or natural gas. If remedial measures to existing utility facilities, such as relocation or protection, become necessary, such measures should be undertaken in such a manner as to minimize any disruptions of service.

Response: Comment noted. Any required relocation or protection work will be fully coordinated with the responsible parties concerned so as to minimize any disruptions of service.

h. Department of Health, Education, and Welfare

Comment 1: We appreciate the opportunity to review the above referenced document which was inadvertently misplaced in our office and has resulted in a review delay. After review, it appears to this office that the impacts of the proposed action and the reasonable alternatives have been adequately addressed.

The proposed project does not have an apparent impact on the Department of Health, Education, and Welfare programs.

Response: Comment noted.

Comment 4: The question of costs goes beyond merely the costs for the flood protection projects. It also includes costs relating to the provision of an adequate quality of life, for existing areas as well as for new areas: costs for utilities, public services, health, education, social services, etc. (not to mention flood proofing of individual homes where needed). The localities should be sure that they can assume these costs as well, particularly as they continue to expand. Of course, a certain amount of growth can contribute on the plus side, to this assessment of costs.

Response: Comment noted.

Comment 5: The point of this discussion is that the local communities and counties should seriously assess their situation and take responsibility for it. They should recognize the necessity for both prudent action and restraint on their part, rather than relying on the federal government and Army Corps of Engineers projects to bail them out of their difficulties. Flood protection projects cannot be the sole solution to the problems of the American Bottoms. Flood protection is important, certainly, but it must go together with local controls and local realization that unrestrained growth is neither feasible nor desirable in a major flood plain.

Response: Comment noted.

Comment 6: We feel that negotiations with local communities along these lines should be a part of the planning process for Corps projects in the American Bottoms, and that projects in this area should not proceed until some understanding has been reached with the localities on these issues.

Response: At present time the U. S. Army Corps of Engineers has no power to elicit such commitments from local communities. However, the zoning alternative is certainly a part of the plan formulation process by the Corps of Engineers. As illustration of this, it should be noted that two low lying areas totaling 1,000 acres in size will be zoned and set aside from future development, functioning as natural detention areas.

j. State of Illinois, Projects Task Force, Department of Conservation

Comment 1: Under the section on Biological Elements beginning on page 29 the discussions of the American Bottoms and of the Blue Waters Ditch Area run together with the result that statements appear to be in conflict, i.e.

a. On page 34 it states that, "The large lakes receive heavy fishing pressure--". Then the last sentence of the paragraph says, "The fishing resource in the Blue Waters area is extremely limited and includes only drainage ditches and a one-acre lake (Lily Lake) which is currently under construction".

Response: The two statements in question do not conflict with each other as the first refers to the American Bottoms, in general, and the second to the Blue Waters area, specifically.

Comment 2: Under "Hunting" on page 34 reference is made to deer hunting whereas in previous discussions of species present deer aren't mentioned.

Response: Same response as given to Comment 1.

Comment 3: Page 60 - Table 8. District Parks - "Population Served" column is apparently in error since it reads, "10,000-10,000". Should it be "10,000-100,000"?

Response: This error has been corrected in the final statement.

Comment 4: On page 74 (G-1). At end of the paragraph add, "This will be carried out by or in cooperation with the Illinois Archaeological Survey".

Response: This statement has been added to the final statement.

Comment 5: On page 87 - line 2. 100 acres in drainage ditches apparently should be 150, the figure used throughout the Statement.

Response: This error has been corrected in the final statement.

Comment 6: On page 73-F (Public Safety). The inference in the statements on channel sides is that a 3V to 1H slope is not as steep as 2V to 1H.

Response: The wording in this section on Public Safety was in error and has been corrected to accurately reflect the extent of channel side slopes.

Comment 7: Page 75, C. It should be clearly stated as to whether or not fences are proposed for the project and, if so, their cost estimate included.

Response: At this time fences are not proposed for the project; however, if the situation warranted them, as stated in the environmental statement, they could be utilized.

Comment 8: Plate Nine - The Number Thirteen Tree Stand is missing.

Response: Tree stand #13 was eliminated from Plate Nine as it consisted of homesites with trees rather than a woods, as it appeared to be from the air.

k. Illinois Archaeological Survey

Comment 1: I have reviewed the Environmental Statement from the standpoint of its discussion of the archaeological resources of the Blue Waters Ditch area and have found it to be very adequate. The Statement lists the categories (significance) and varieties of archaeological sites present, and also discusses which of these sites will be potentially effected by the Corps project. The supporting archaeological data in the Environmental Inventory Report Part A also places the archaeological resources of the Blue Waters Ditch area in its broader relationship and perspective to the American Bottoms.

This Draft Environmental Statement with its careful review of the existing archaeology is the best draft ES your office has prepared to-date. I would like to compliment your efforts in this regard and also extend our appreciation to Dr. Sidney Denny for his work.

We encourage your office to maintain this very high quality reporting and assessment of archaeological resources in your various project areas, and I hope you will continue to use our office as a clearing house for advice on archaeological matters and personnel.

Response: Comment noted.

1. Southwestern Illinois Metropolitan Area Planning Commission

Comment 1: The environmental planning staff has reviewed the EIS draft for the Blue Waters Ditch Improvements and believes it generally presents the effect this project will have on the environment. We would, however, like to point out that we believe the adequacy of the document is based on several questionable assumptions, which include:

Response: Specific comments of concern are addressed below.

Comment 2: Groundwater elevation is not an important factor in the design, operation and maintenance of the project facilities;

Response: The reader is referred to the revised groundwater discussion in Part 4.1.2.2. for clarification of this concern.

Comment 3: The increased pumping capacity (2,600 cfs) to be installed at Blue Waters when combined with runoff from Prairie Du Pont Creek and the amount of outflow from the Upper Harding Area (which is an unknown at the present time) will have no adverse effects on the capacity of the Prairie Du Pont Floodway and its levees;

Response: This concern has been taken into consideration during the formulation of this project and studies indicate that there would be no adverse effects on the capacity of the Prairie du Pont Floodway and its levees.

Comment 4: Adequate operation and maintenance of project facilities (short and long term) will be provided by some entity;

Response: As part of the local assurances required for the development of this project the local interests must, "Maintain and operate all the works after completion including removal of silt and debris from impoundment areas and channels in accordance with regulations prescribed by the Secretary of the Army."

Comment 5: Floodplain regulations can and will be enforced in areas designated in the Project Plan as natural ponding areas, and/or the State of Illinois will purchase these areas; and

Response: See response to comment 4. Local assurances also require local interests to, "Prevent encroachment on improved channels, ponding areas, and detention areas and if encroachment occurs or capacities are impaired provide substitute storage or equivalent pumping capacity promptly without cost to the United States..."

Comment 6: A funding source at the federal or state level will be available to local entities in constructing secondary storm drainage facilities, which will be complementary to but a necessary component of the project.

Response: In areas of existing developments secondary drainage systems (storm sewers) must be installed to complete the comprehensive management of stormwater runoff. The structural improvements such as storm sewers, laterals, and trunk lines are eligible for funds under grant-in-aide programs administered by other agencies as the Department of Housing and Urban Development and the Environmental Protection Agency.

Comment 7: Since the need for the Blue Waters project is a critical component of the safe, efficient, and orderly development of the Metro-East, the commission hopes that the "assumptions" listed above will be subjected to further exploration and, consequently, the nature of their effect on the environment clearly set forth in the final Environmental Impact Statement.

Reponse: Comment noted. The reader is referred to the specific responses addressed above.

m. East-West Gateway Coordinating Council

Comment 1: The East-West Gateway Coordinating Council, in its capacity as a designated regional clearinghouse, is required to comment on proposed projects using Federal funding within the Council's planning area.

Our staff is in the process of reviewing the Blue Waters Ditch Draft Environmental Impact Statement, and soliciting comments from agencies and units of local government that may be affected by the proposed project. Through our communication with two of these cities (St. Clair County and the Southwestern Illinois Metropolitan and Regional Planning Commission), we have become aware of a great deal of concern for the specific design details of the Blue Waters Ditch proposal. In order to address the concerns of these entities, and thereby complete our review of the Draft Environmental Impact Statement, we hereby request a more detailed description of the design of physical improvements for the Blue Waters Ditch area.

We look forward to completing our review as soon as possible. If you have any questions regarding our review, please do not hesitate to contact me.

Response: No subsequent letter regarding the Blue Waters Ditch Draft Environmental Statement has been received by the St. Louis District. It should be noted that coordination was carried on with regional planning agencies, local interests, and the State of Illinois. The proposed project resulted in part from this multi-agency input.

The source of concern cited in the letter probably stems from Southwestern Illinois Metropolitan Area Planning Commission, whose letter also appears in this text.

A description of the proposed project appeared in Section I-IV of the Draft Environmental Statement as did a plate (Plate 1) showing the project.

n. St. Clair County Office of Administration

Comment 1: I am sure you realize the significance that the rising water-table will have on future projects within the Hillside Drainage Basin. I feel you should in some manner address this problem relative to the Blue Waters Ditch impact statement.

Response: The reviewer is referred to the discussion on groundwater presented in Part 4.1.2.2.

Comment 2: We would certainly like to see a definition of responsibility as to who will maintain these project facilities, both short and long range. If there will be a transfer of responsibility to another local entity, what criteria will be used to select this responsible entity and what types of assurances will be required?

Response: Detailed information pertaining to the transfer of responsibilities and types of local assurances is presented in the General Design Memorandum which is available for review at the St. Louis District Office.

Comment 3: The State of Illinois assures the maintaining of floodplains, in particular, regulatory procedures for the Blue Waters Ditch watershed. We think the regulations, rules, and procedures, should be part of this documentation.

Response: See response to Comment 2. It is not considered necessary to present this information in the environmental statement.

o. Illinois State Chapter of the American Fisheries Society

Comment 1: I obtained the following information from Mr. Peter Paladino, a member of the Illinois Chapter of the American Fisheries Society and also a district fishery biologist with the Division of Fisheries, Department of Conservation:

The present status of the aquatic environment of the Blue Waters Area, is one of almost complete alteration from that which originally existed in the area. Urbanization, agricultural use and floodplain drainage projects have reduced and degraded the aquatic habitat to a level where a project like the Blue Waters Ditch proposal can only have an insignificant impact.

The fisheries of the area is dependent to a large extent on transient species that invade the drainage ditches of the Blue Water Area periodically during periods of high water. These fish emigrate into the area from the Mississippi River and small streams that lie in adjacent areas.

The survey of the area conducted by Dr. Jamie Thomerson, Southern Illinois University - Edwardsville, Illinois revealed a limited amount of recreational fishing occurring at the present time in drainage ditches of the Blue Waters Ditch system. As the E. St. Louis area is severely limited in recreational outlets of this nature, an effort should be made to preserve as much fishing potential as possible.

In summary the impact on the recreational fishing of the area should be minimized. The impact of the project itself on the aquatic environment and the fisheries of the area should be negligible.

Response: Comment noted.

9.3.2 REVIEW COMMENTS AND RESPONSES FROM APRIL 1975 COORDINATION

a. United States Department of the Interior

Comment 1: The Department of the Interior has reviewed the Draft Environmental Statement for the Illinois Blue Waters Ditch Improvements, East St. Louis and Vicinity, Illinois, as requested in Mr. Jack R. Niemi's transmittal letter of April 4, 1975, to our Assistant Secretary, Program Development and Budget. Our comments which are of a general nature relate to areas of our jurisdiction and expertise and have been prepared in accordance with the National Environmental Policy Act of 1969.

Except for the following additional comments the Departmental letter of May 10, 1974 still expresses our views and recommendations on the subject project and draft environmental statement.

Response: Comment noted. Specific comments are addressed below.

Comment 2: Approximate lengths of residence time for impounded water in the reservoirs, seepage rates plus flow-through rates compared to the rapid percolation rates mentioned for the well-drained soils, evaporation rates, and quality-of-water changes during retention are needed for adequate evaluation of impacts on ground-water resources.

Response: Detailed information such as that identified above are not considered necessary in the environmental statement. Such information is considered during the design of the proposed project and appropriately summarized in the environmental statement.

Comment 3: A water-table map is needed to provide a basis for consideration of both existing conditions and impacts of the project.

••

Response: Refer to Section III, "Ground Water Geology" in Environmental Inventory Report, Part A. and Figure III-4, Part B.

Comment 4: The environmental statement should include a geologic map and cross section, showing the location of known faults which may influence the geohydrology of the area as well as the integrity of proposed structural measures. This map should show the location of the Pine Prairie dome and the Reddell oil field to permit proper evaluation of impacts.

Response: The bedrock geology and structural geology are addressed in the Inventory. There is no Pine Prairie dome or Reddell oil field near the project.

Comment 5: The draft statement comments that the Pleistocene Chicot aquifer, which is the major source of irrigation water in the area, is recharged by infiltration of rainfall and seepage from streams. The Evangeline aquifer

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Comment 5: The draft statement comments that the Pleistocene Chicot aquifer, which is the major source of irrigation water in the area, is recharged by infiltration of rainfall and seepage from streams. The Evangeline aquifer

of the Foley Formation is reportedly recharged by percolation of water from the overlying Pleistocene deposits. The statement should therefore evaluate effects of the proposed impoundments and any resultant changes in stream-flow regimen on recharge to the aquifers.

Response: The Inventory addresses the potential of the Henry formation aquifer (Wisconsinan) and the bedrock aquifers. There is no Chicot aquifer or Evangeline aquifer of the Foley Formation in the study area.

Comment 6: We concur with the statements that increased development in the area to be protected may lead to increased risks of which the public may not be aware (p. 71). For this reason it is important that these risks are carefully evaluated and publicized prior to the start of the project.

Response: Comment noted. This environmental statement is one means of accomplishing this awareness.

b. United States Environmental Protection Agency

Comment 1: In response to your letter of April 3, 1975, we have reviewed the addenda to the Draft Environmental Impact Statement (EIS) for the Blue Waters Ditch Improvements, East St. Louis and Vicinity. Although some minor changes have been made in the project, we believe the comments we submitted on the Draft EIS dated May 13, 1974, continue to represent our views concerning the project as well as the EIS.

Response: Comment noted.

c. Department of Transportation, U.S. Coast Guard

Comment 1: This is in response to your letter of 3 April 1975 concerning a revised draft environmental statement for East St. Louis and Vicinity, Blue Waters Ditch Improvements, St. Clair County, Illinois.

The Department of Transportation has reviewed the material submitted. The comments made in our letter of 23 April 1974 still apply and should be addressed in the final statement.

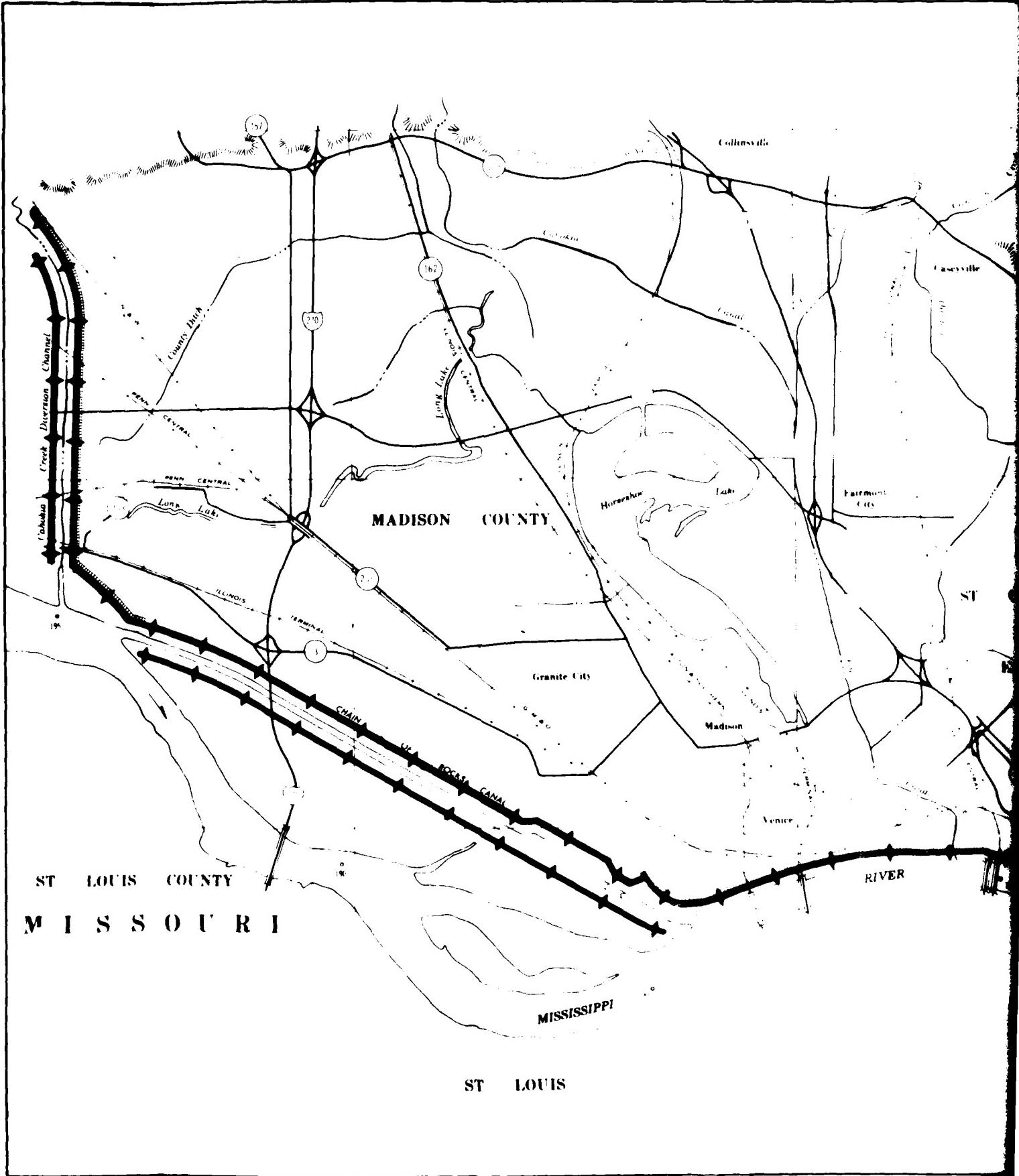
The Department of Transportation has no other comments to offer nor does it have any objection to this project.

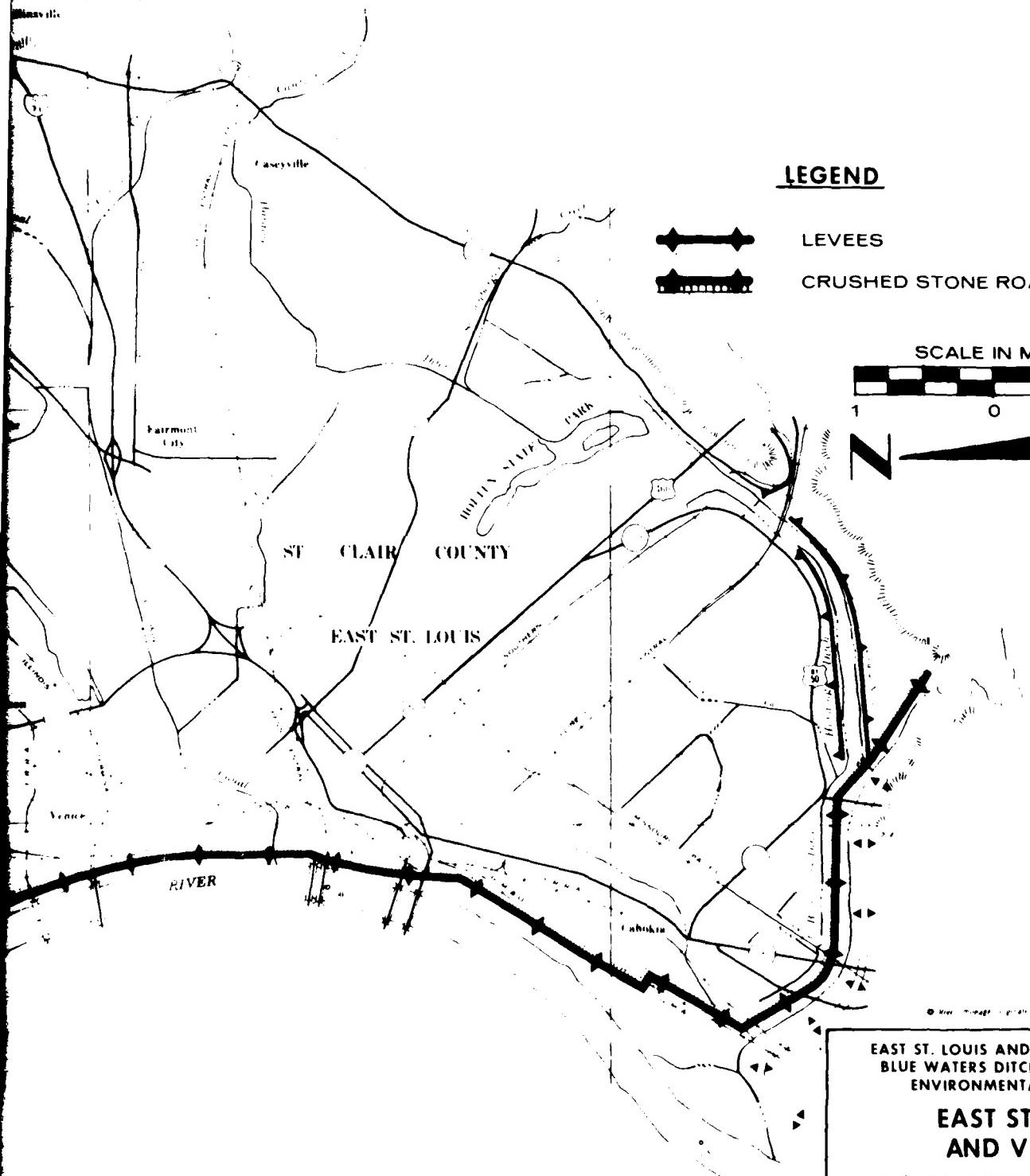
Response: Comment noted.

d. St. Clair County Board

Comment 1: In reviewing the environmental impact statement put together by the Corps of Engineers, St. Louis District, we find that you have done an excellent job in answering those questions relative to any environmental problems that could possibly occur. As you know we were proponents from day one for impoundment reservoirs as opposed to dry reservoir systems and are very happy that the Corps of Engineers and the State of Illinois have finally reached an agreement that impoundment reservoirs are the most acceptable long-range for that particular Watershed. We totally support the environmental impact statement that you have put together for the Blue Waters Ditch improvement area and totally support the project.

Response: Comment noted.





EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS
ENVIRONMENTAL STATEMENT

**EAST ST. LOUIS
AND VICINITY**

U. S. Army Engineer District, St. Louis
Corps of Engineers
St. Louis, Mo.

PLATE 1

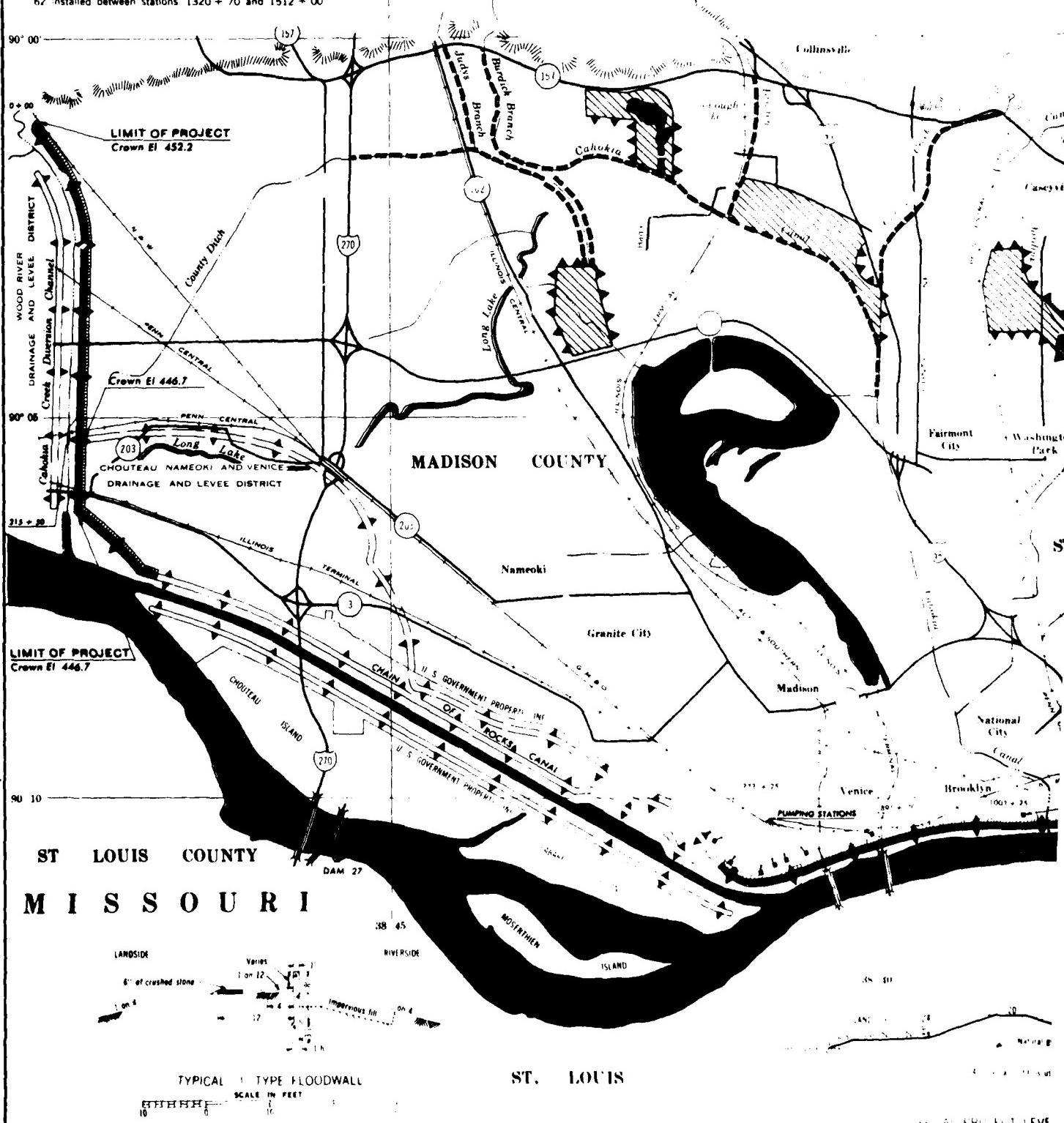
CORPS OF ENGINEERS

Note

Note Seepage relief wells

- b installed between stations 0 + 00 and 215 + 50
 - 93 installed between stations 773 + 25 and 891 + 70
 - 38 installed between stations 1003 + 25 and 114 + 00
 - 103 installed between stations 1211 + 50 and 1320 + 25
 - 62 installed between stations 1320 + 70 and 1512 + 00

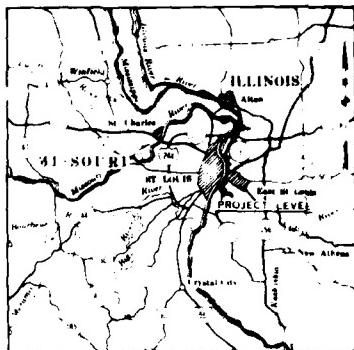
38 45



Next

For dikes and revetments see sheets 112 and 114

U.S. ARMY



ILLINOIS

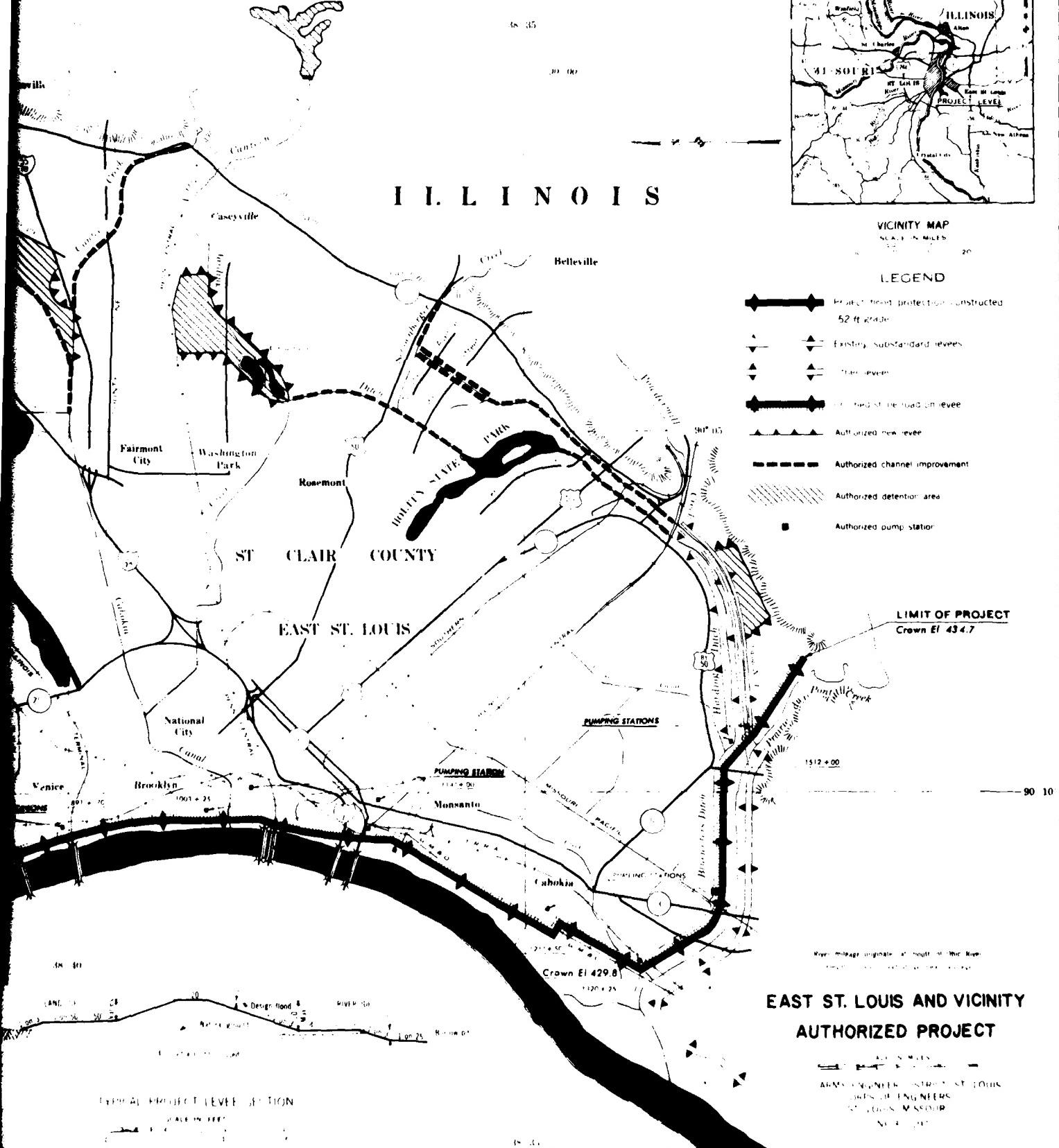
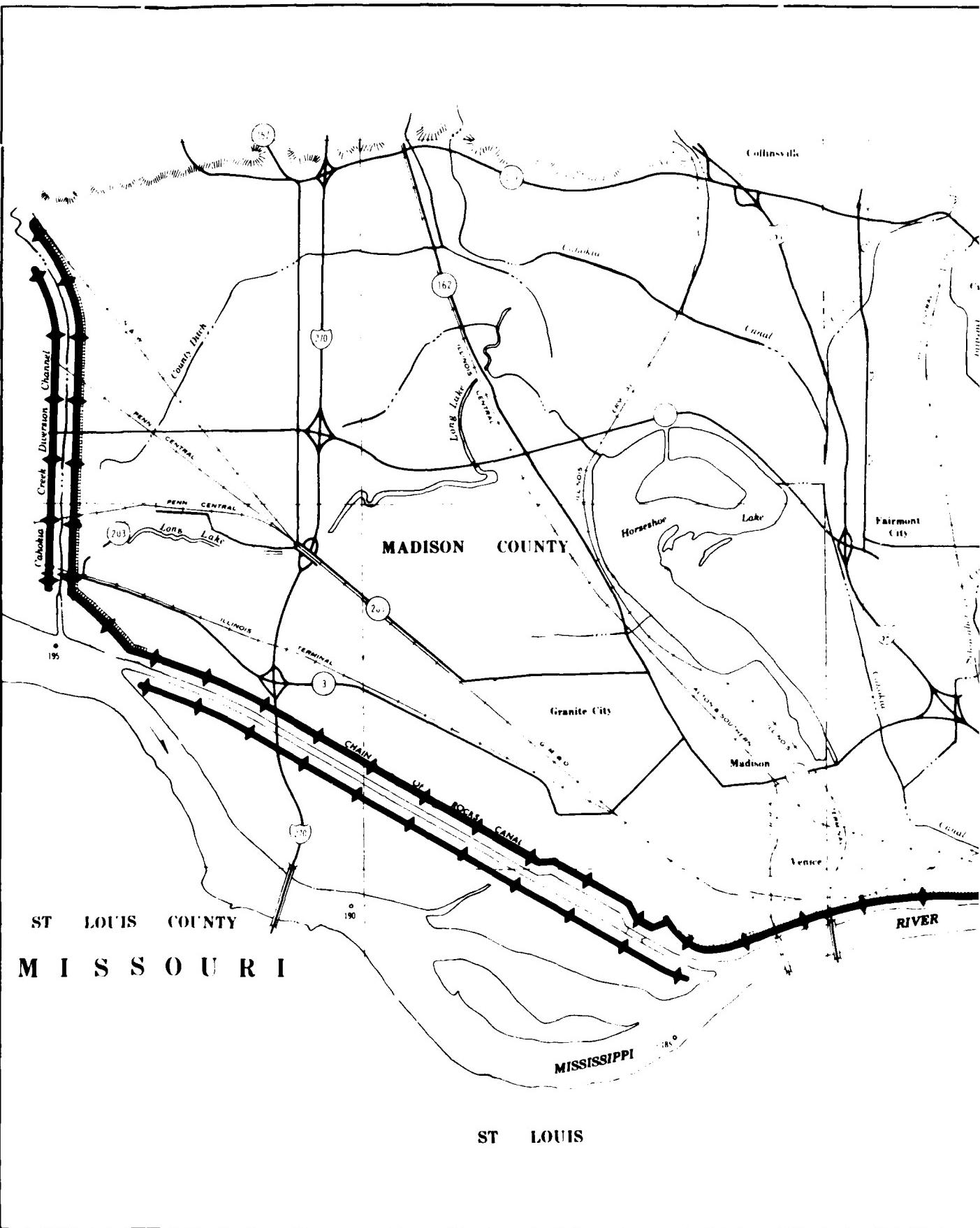
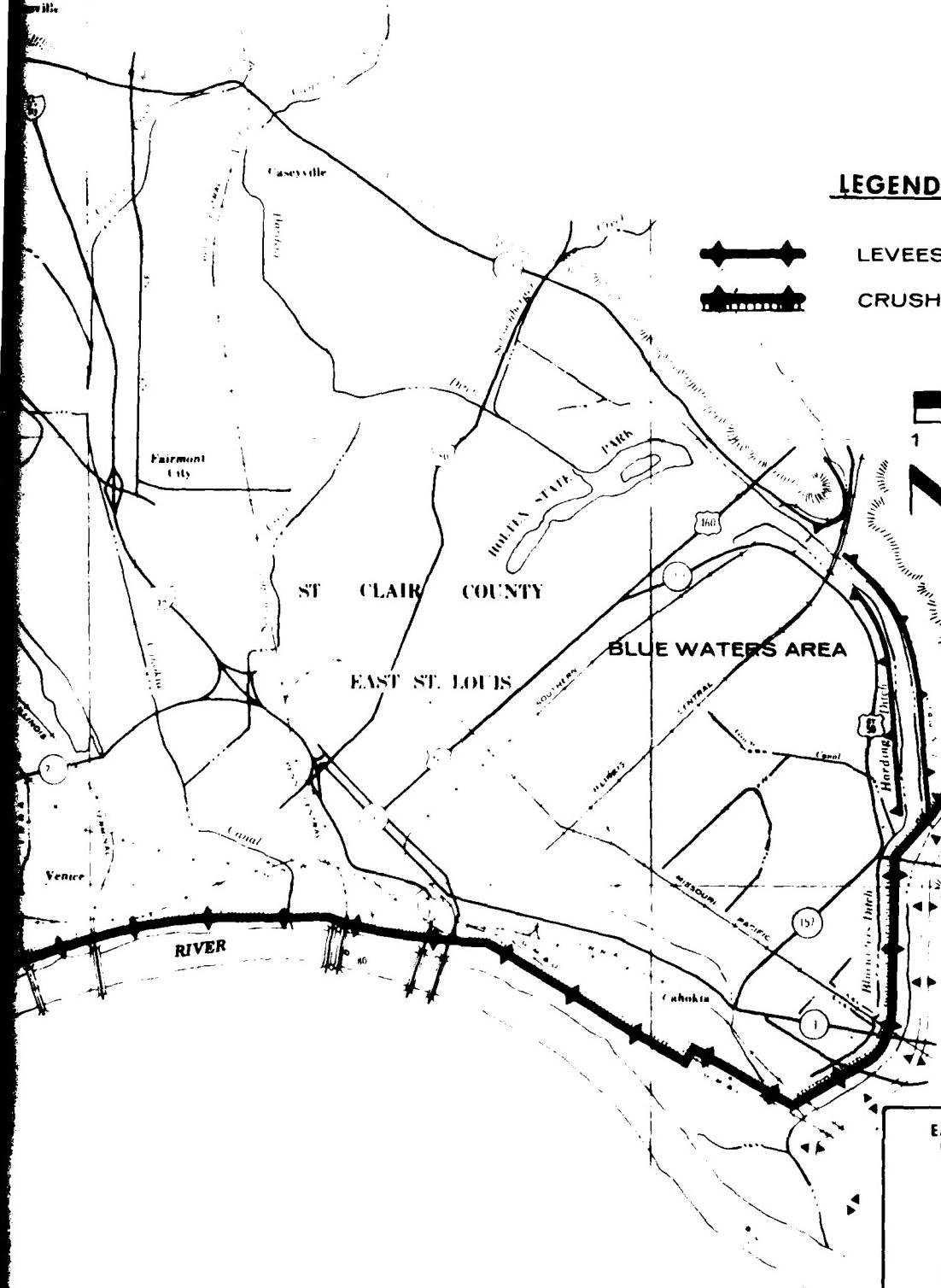


PLATE 2





LEGEND

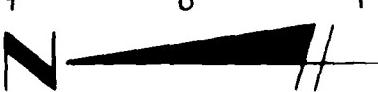


LEVEES



CRUSHED STONE ROAD ON LEVEE

SCALE IN MILES



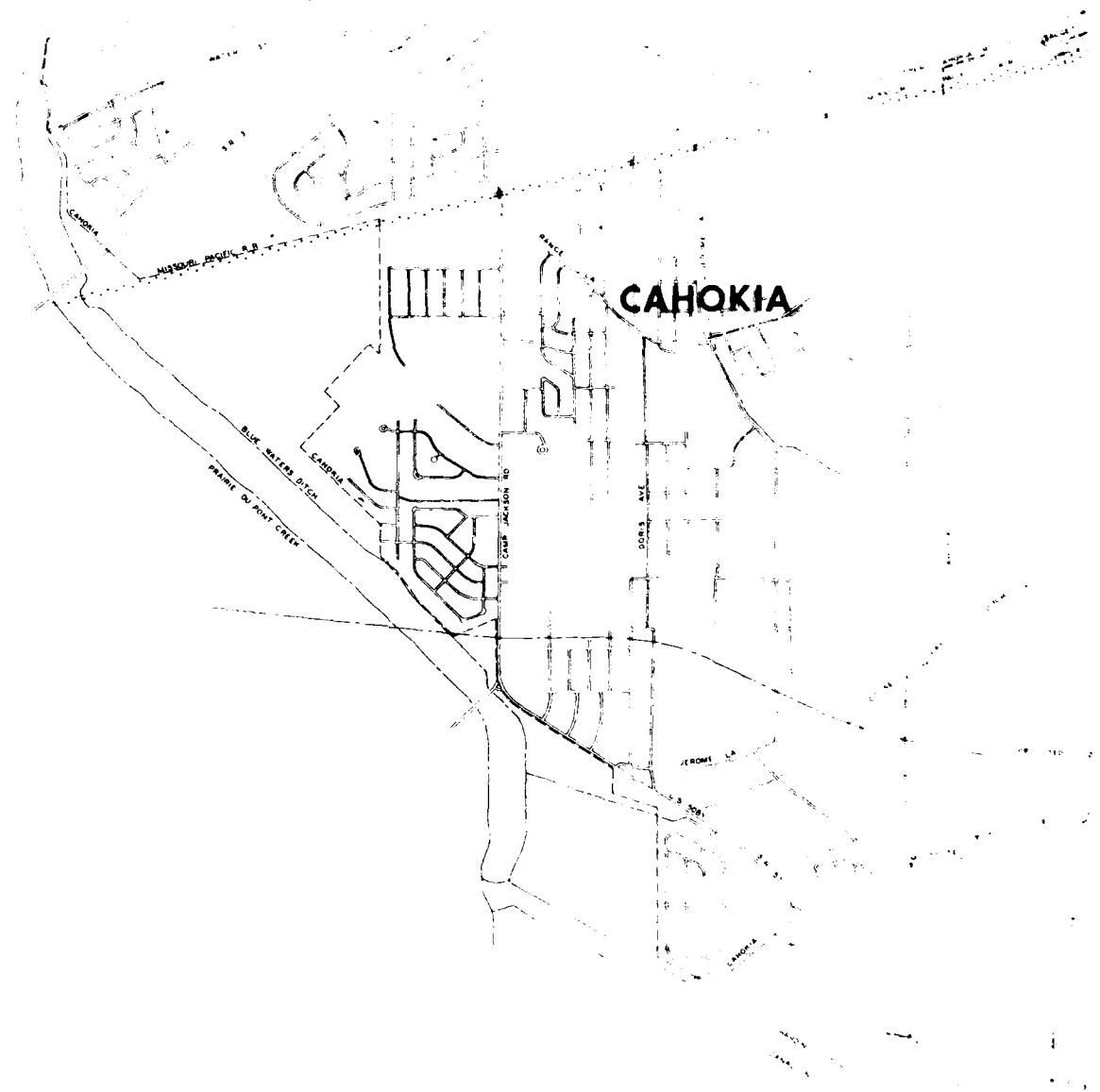
• Kilometerage originate at mouth of the Blue Waters Ditch

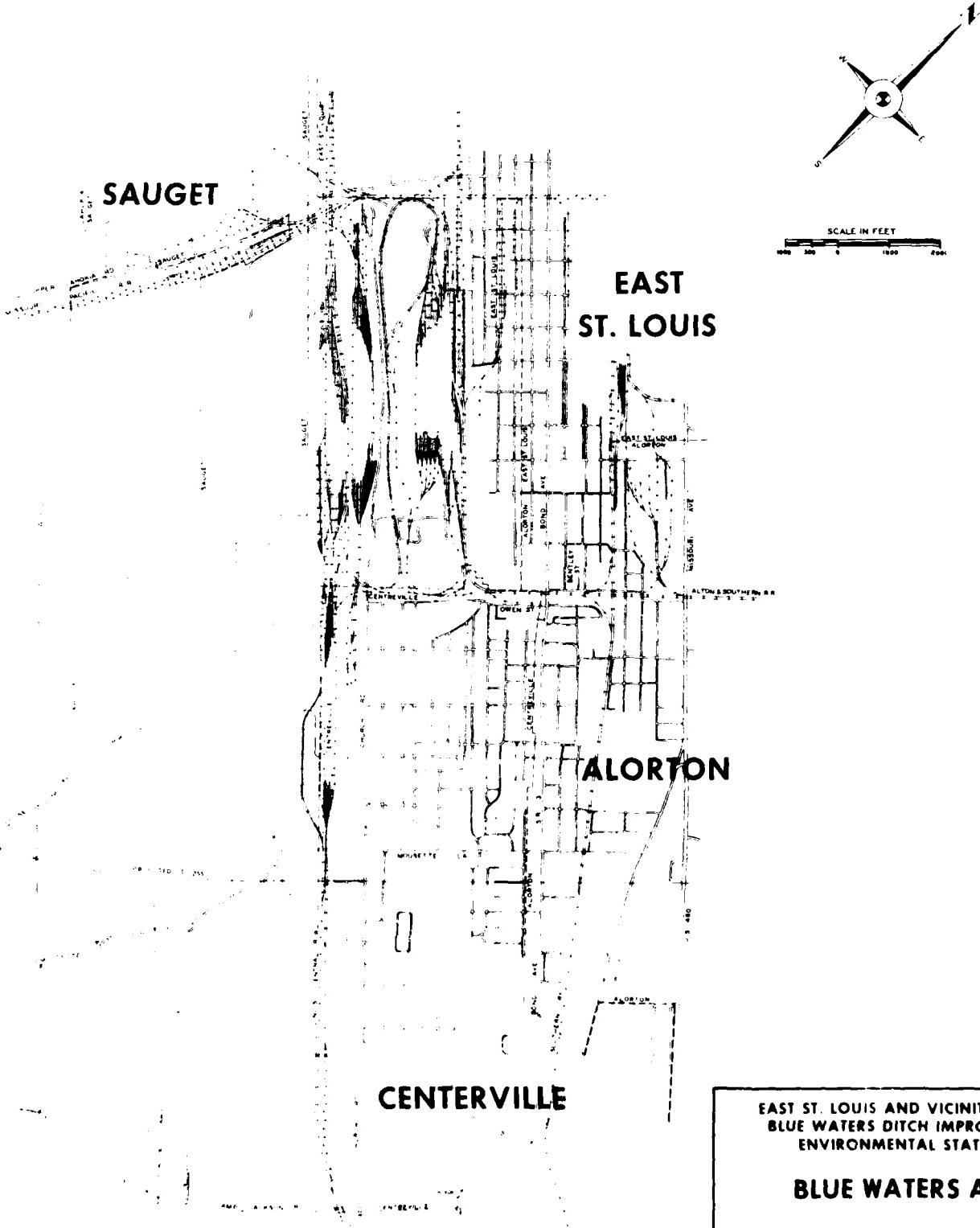
EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS
ENVIRONMENTAL STATEMENT

**LOCATION OF
BLUE WATERS AREA**

U. S. Army Engineer District, St. Louis
Corps of Engineers
St. Louis, Mo.

SAUGI

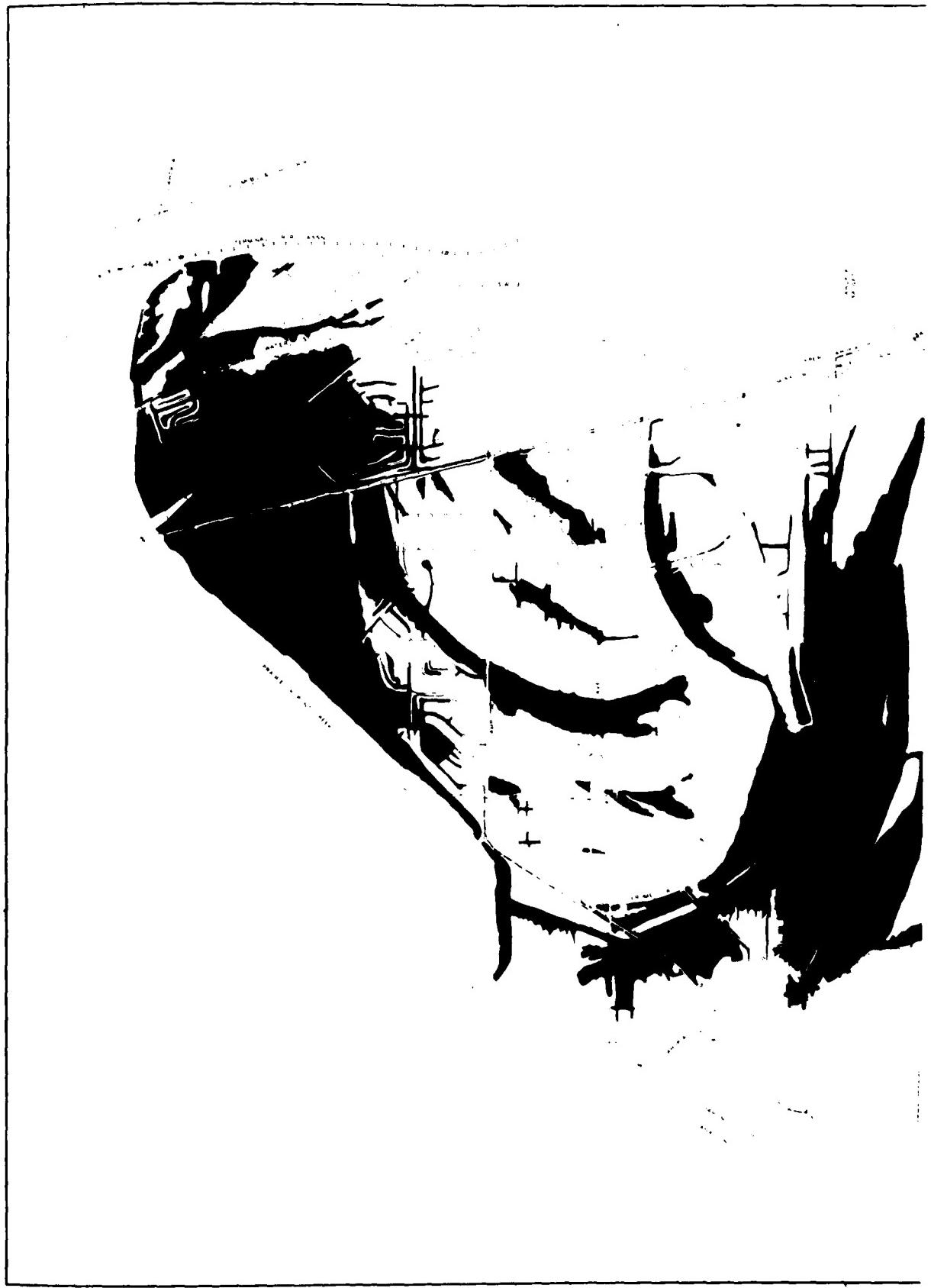


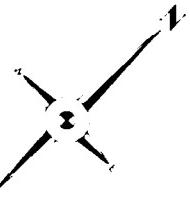


EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS
ENVIRONMENTAL STATEMENT

BLUE WATERS AREA

U. S. Army Engineer District, St. Louis
Corps of Engineers
St. Louis, Mo.





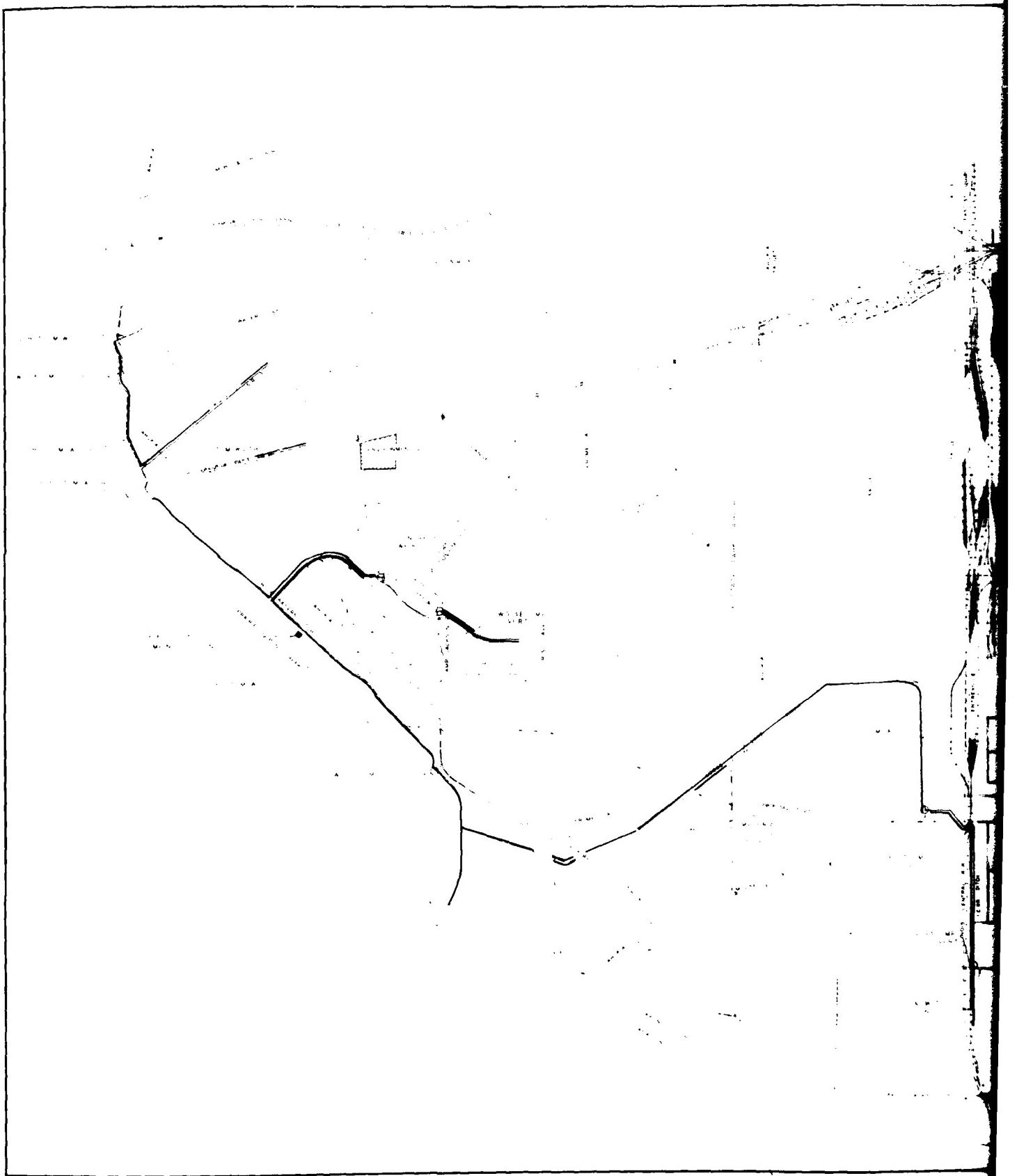
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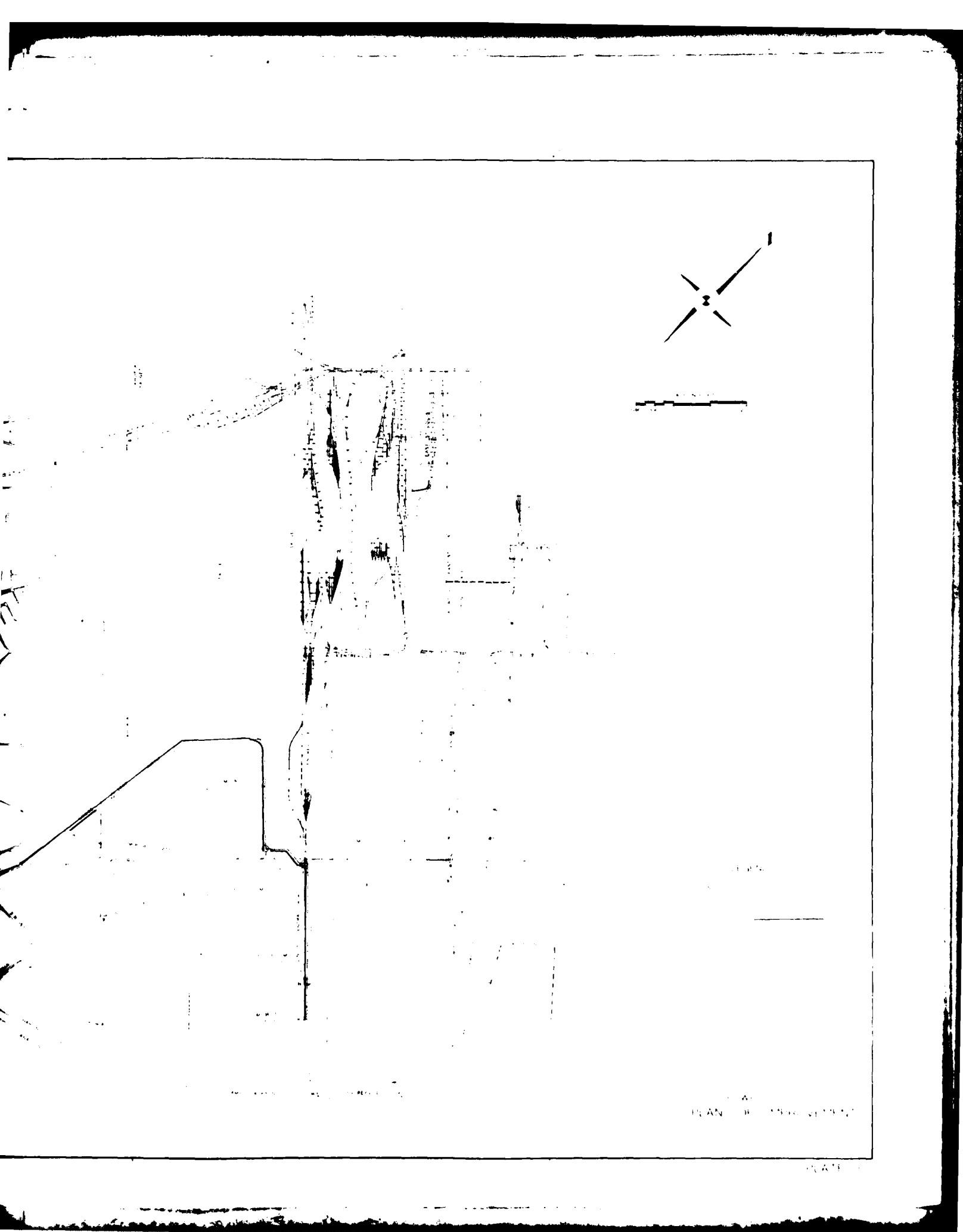
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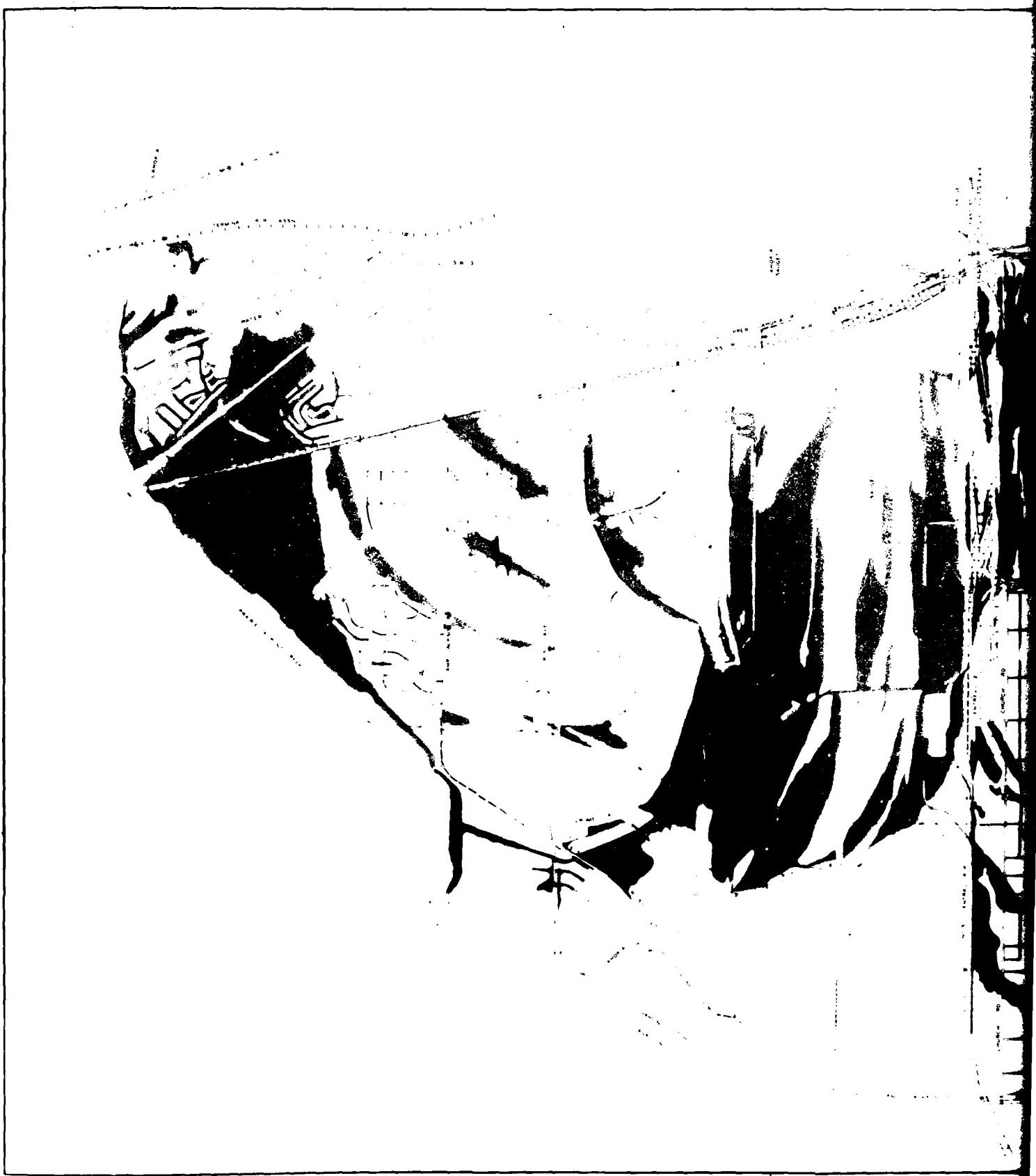
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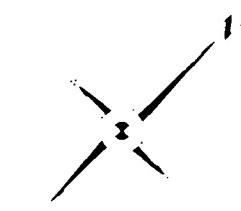
REVISIONS	
U. S. ARMY ENGINEER DISTRICT ST. LOUIS CO. OF ENGINEERS AT LOMB, MISSOURI	
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HARDING DITCH COMBINED AREA BLUE WATERS DITCH IMPROVEMENTS GENERAL DESIGN MEMORANDUM DM NO. 1	
AREA FLOODED BY 100 - YEAR CRITERIA STORM	
NO. THIS SHEET NO. DRAWING NO.	
F DACW 43	
SHEET OF	

PLATE 5







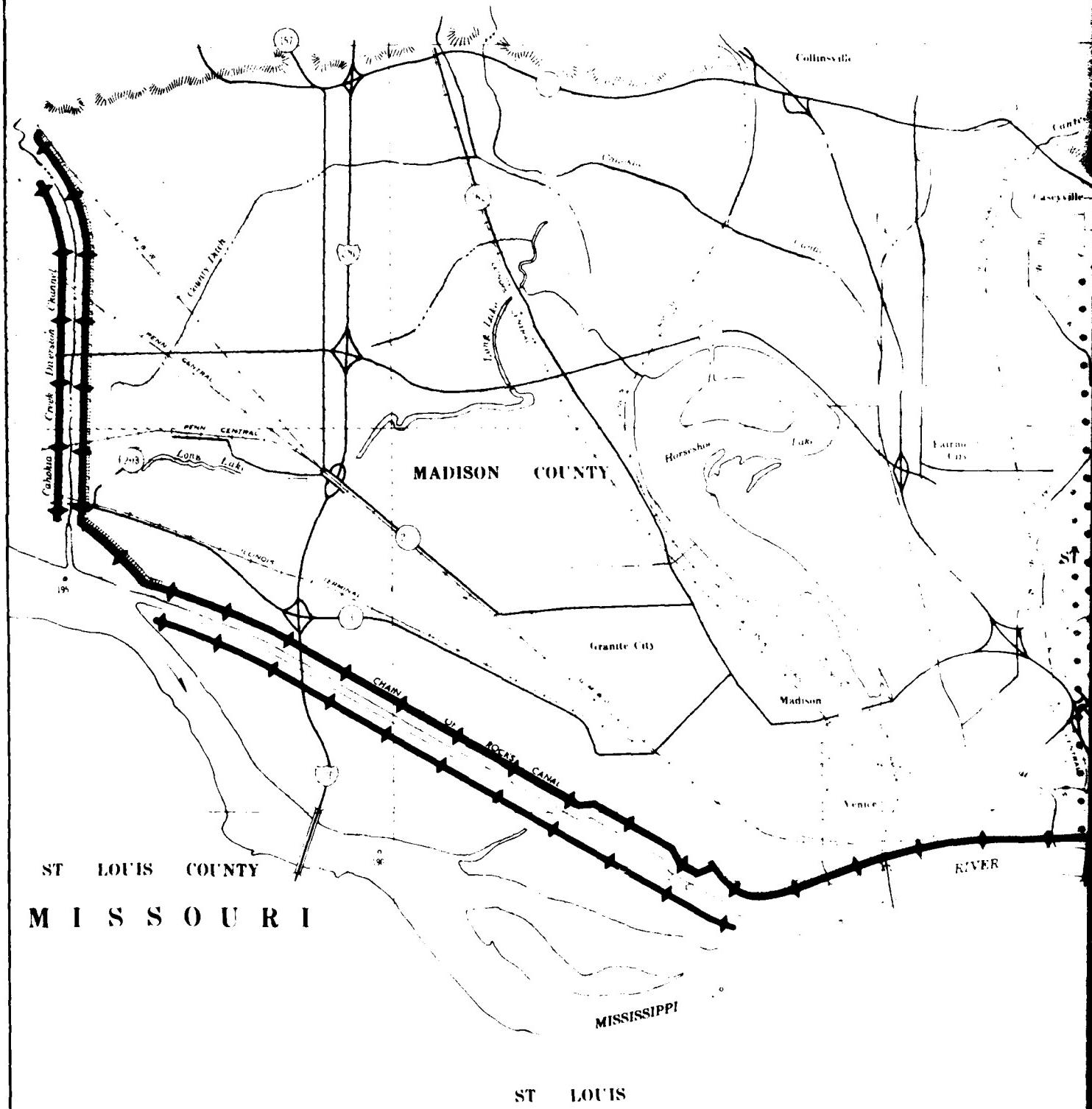


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LEGEND

100 YEAR FLOOD OUTLINE
WITH RECOMMENDED
IMPROVEMENTS IN PLACE

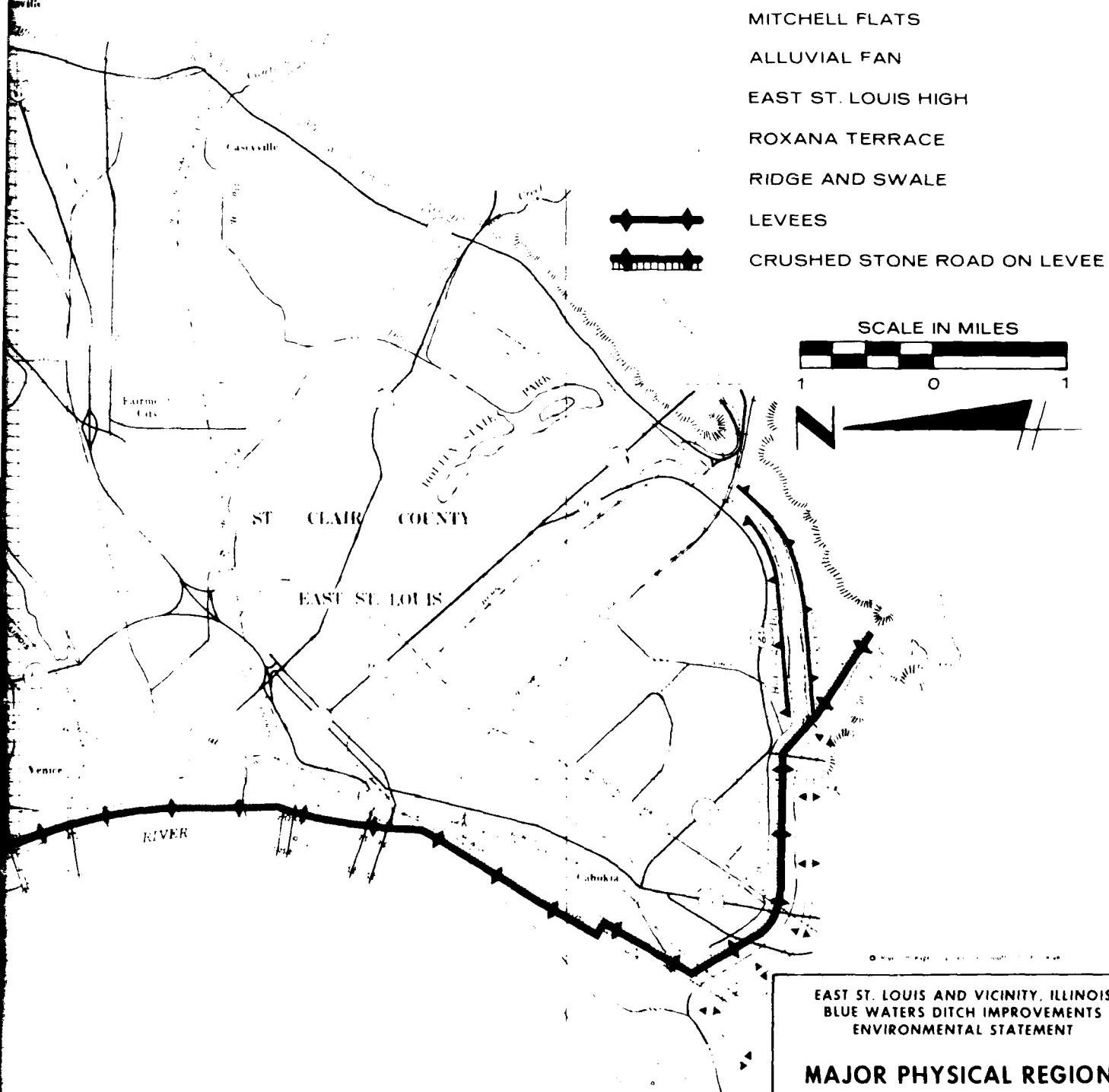
U. S. ARMY ENGINEER DISTRICT ST. LOUIS COMPTON OF ENGINEERS AT LOUISVILLE, KENTUCKY	
OHIO RIVER BACKSTAB AND MASON CITY GENERAL DESIGN MEMORANDUM DM NO. 1	
HARDING DITCH COMBINED AREA BLUE WATERS DITCH IMPROVEMENTS GENERAL DESIGN MEMORANDUM DM NO. 1	
AREA FLOODED BY 100 YEAR FLOOD EVENT WITH RECOMMENDED IMPROVEMENTS IN PLACE	
F DACW 43	
PLATE 6A	



LEGEND

- DISSECTED UPLAND
- MITCHELL FLATS
- ALLUVIAL FAN
- EAST ST. LOUIS HIGH
- ROXANA TERRACE
- RIDGE AND SWALE
- LEVEES
- CRUSHED STONE ROAD ON LEVEE

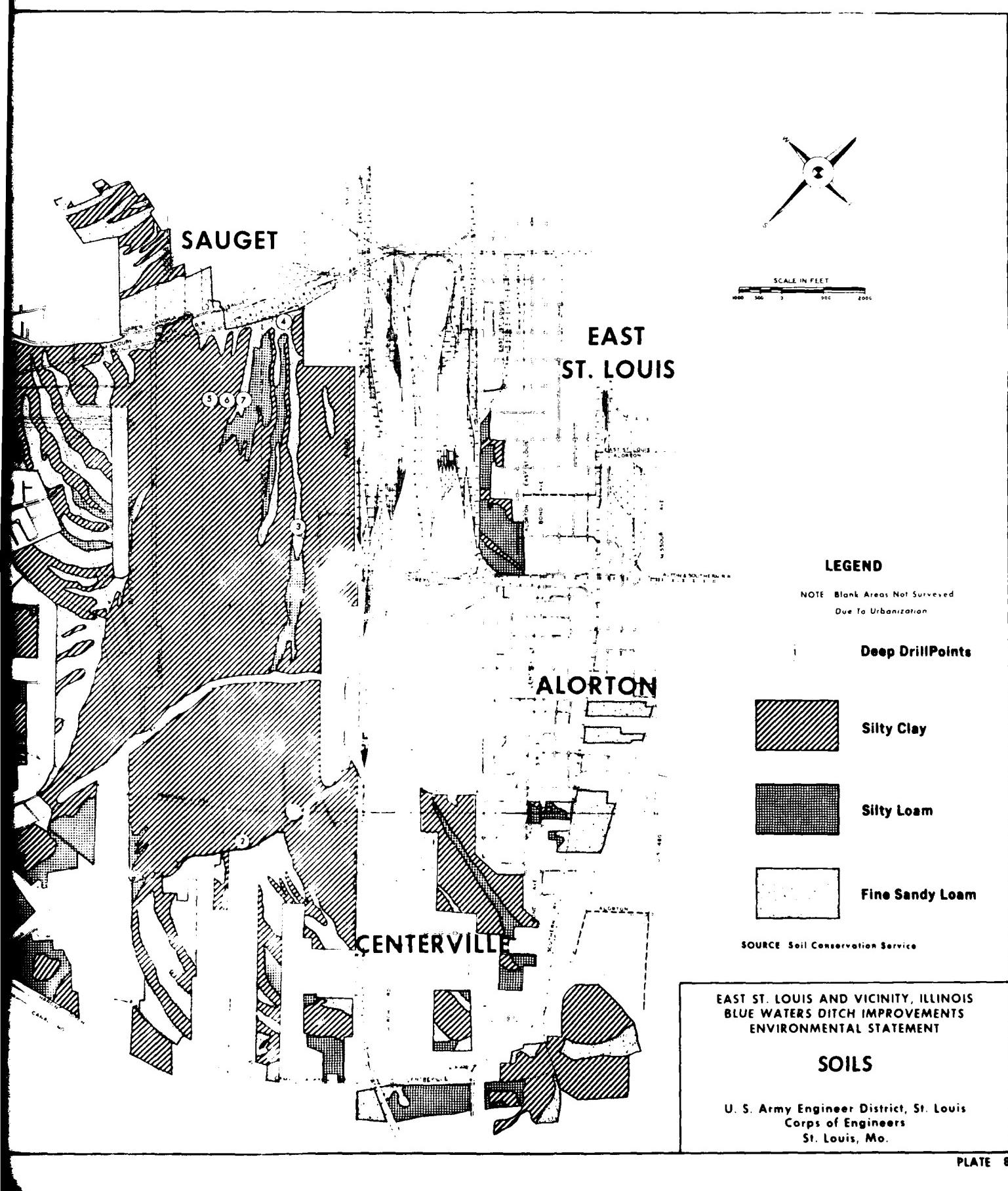
SCALE IN MILES



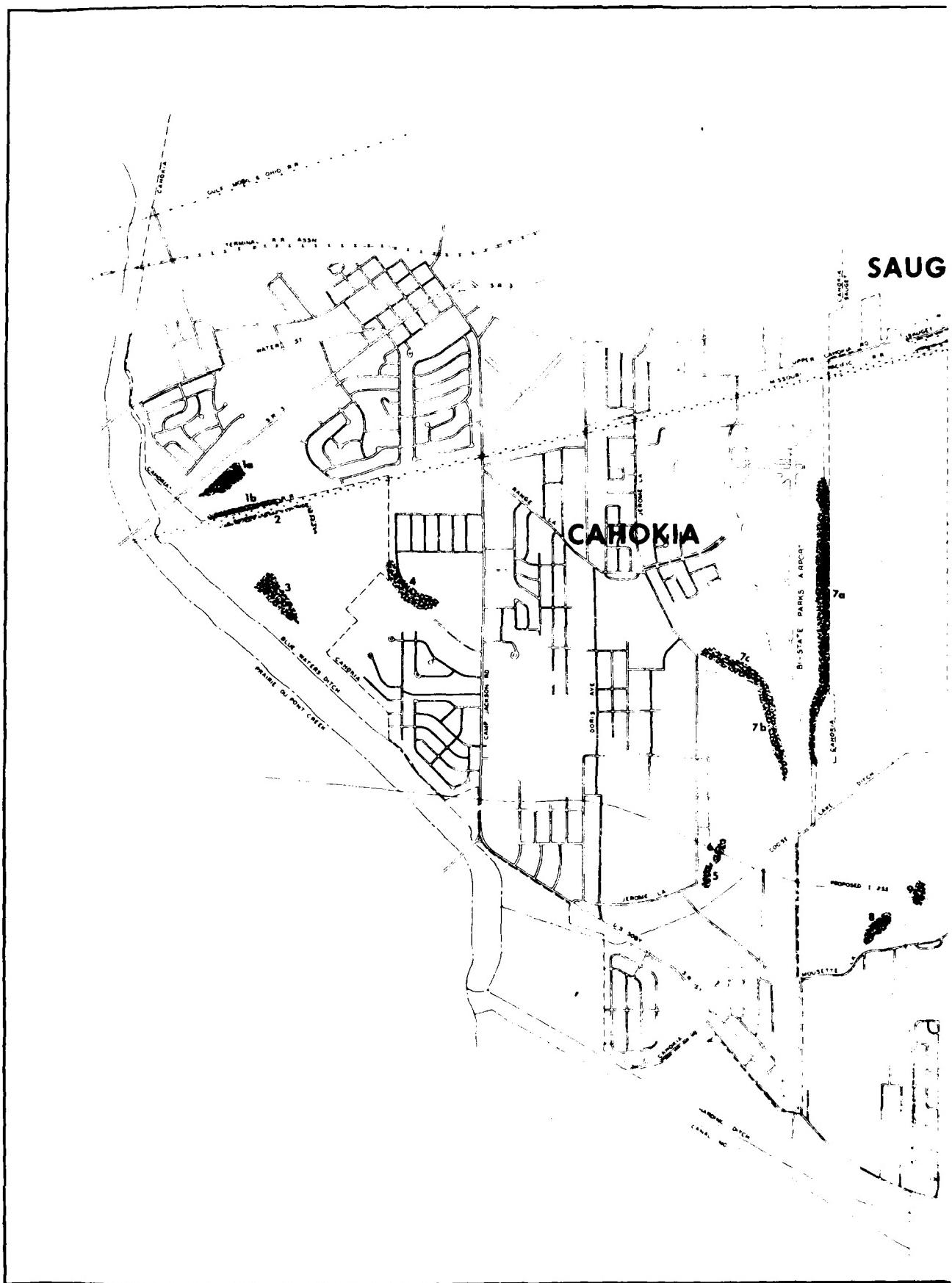
MAJOR PHYSICAL REGIONS

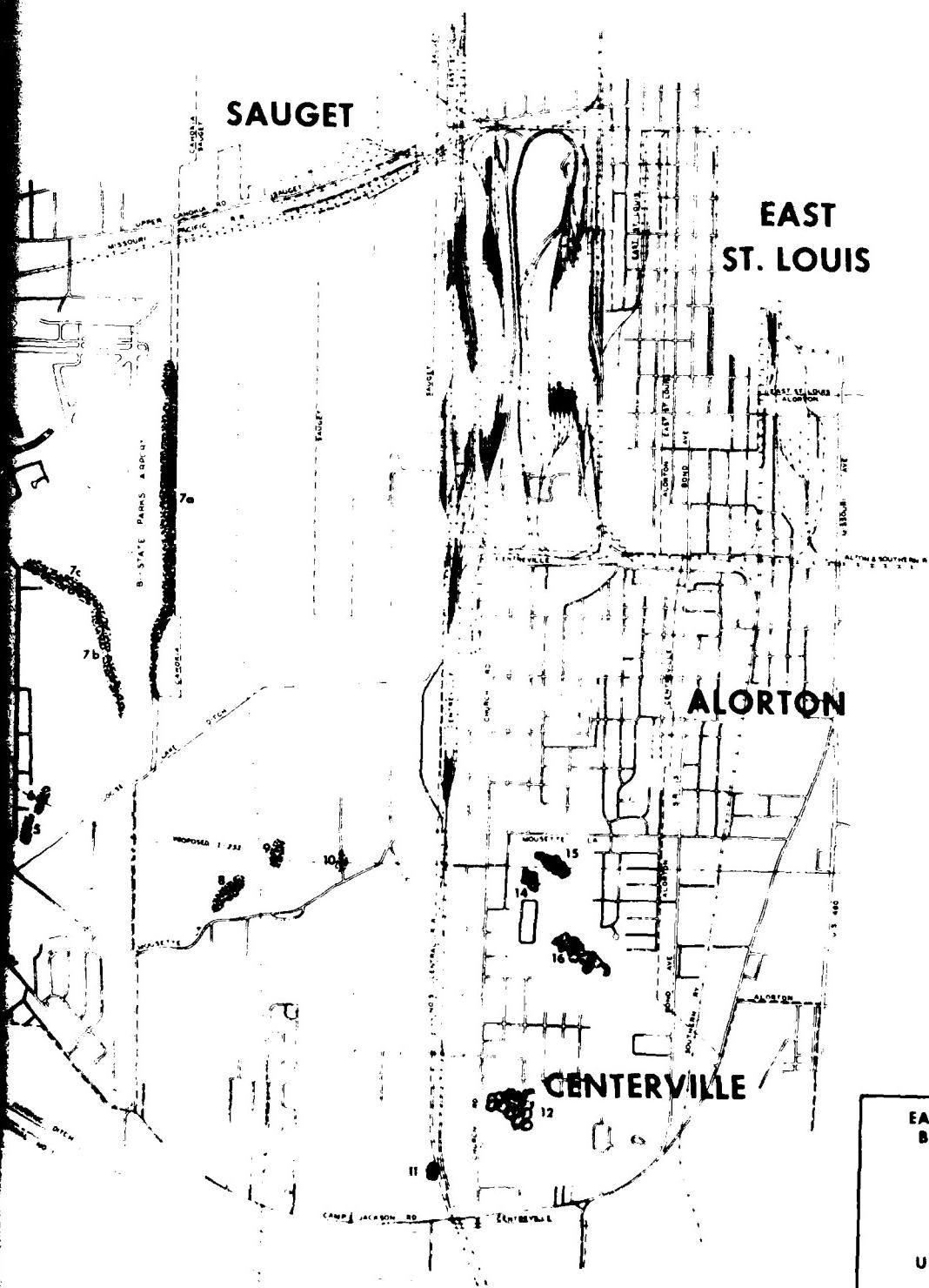
U. S. Army Engineer District, St. Louis
Corps of Engineers
St. Louis, Mo.





SAUG





LEGEND

Tree Stands Outside of Developed Areas

SOURCE: Field Study

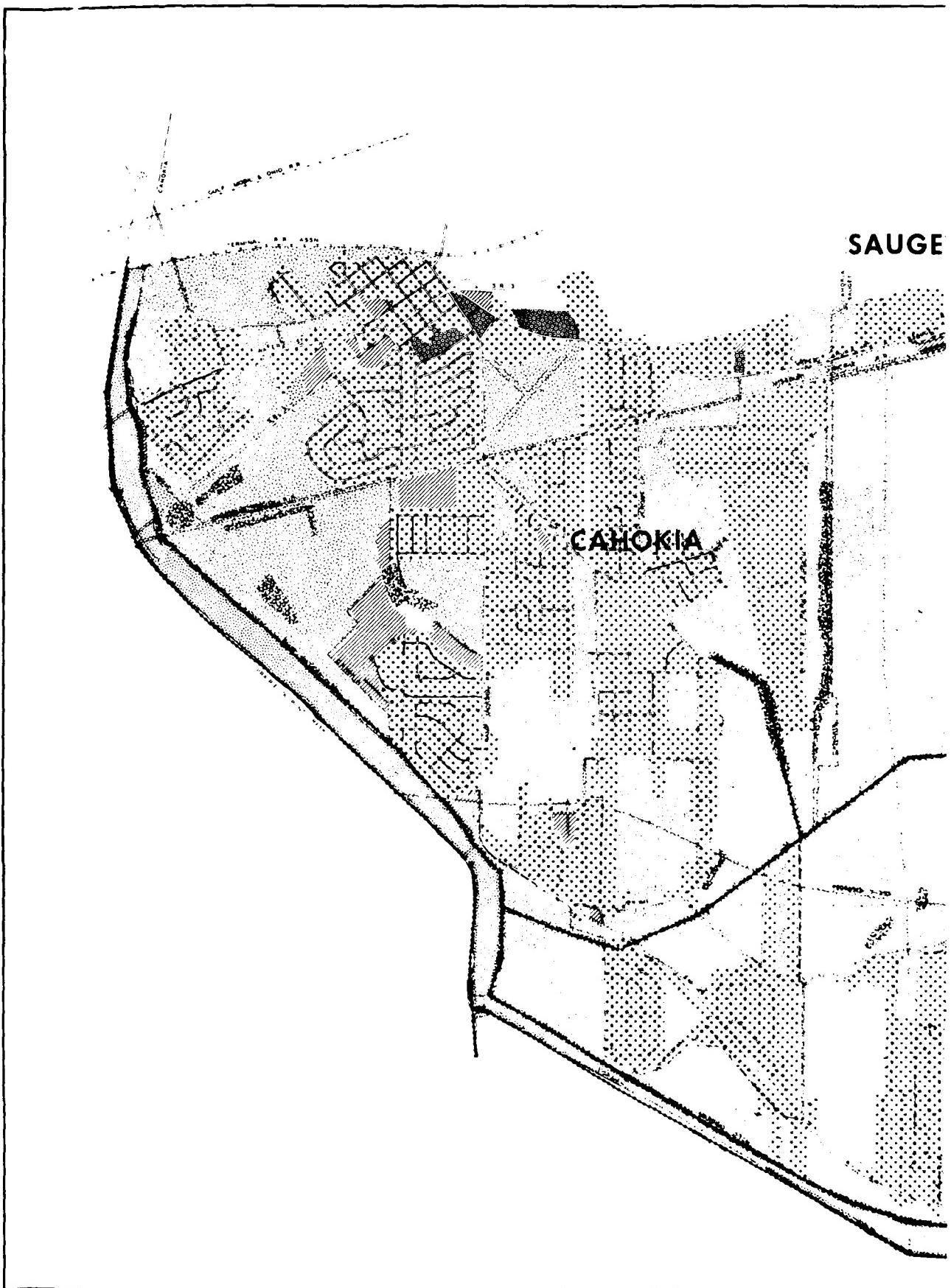
EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS
ENVIRONMENTAL STATEMENT

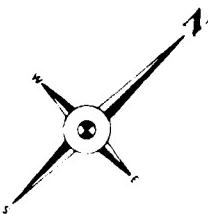
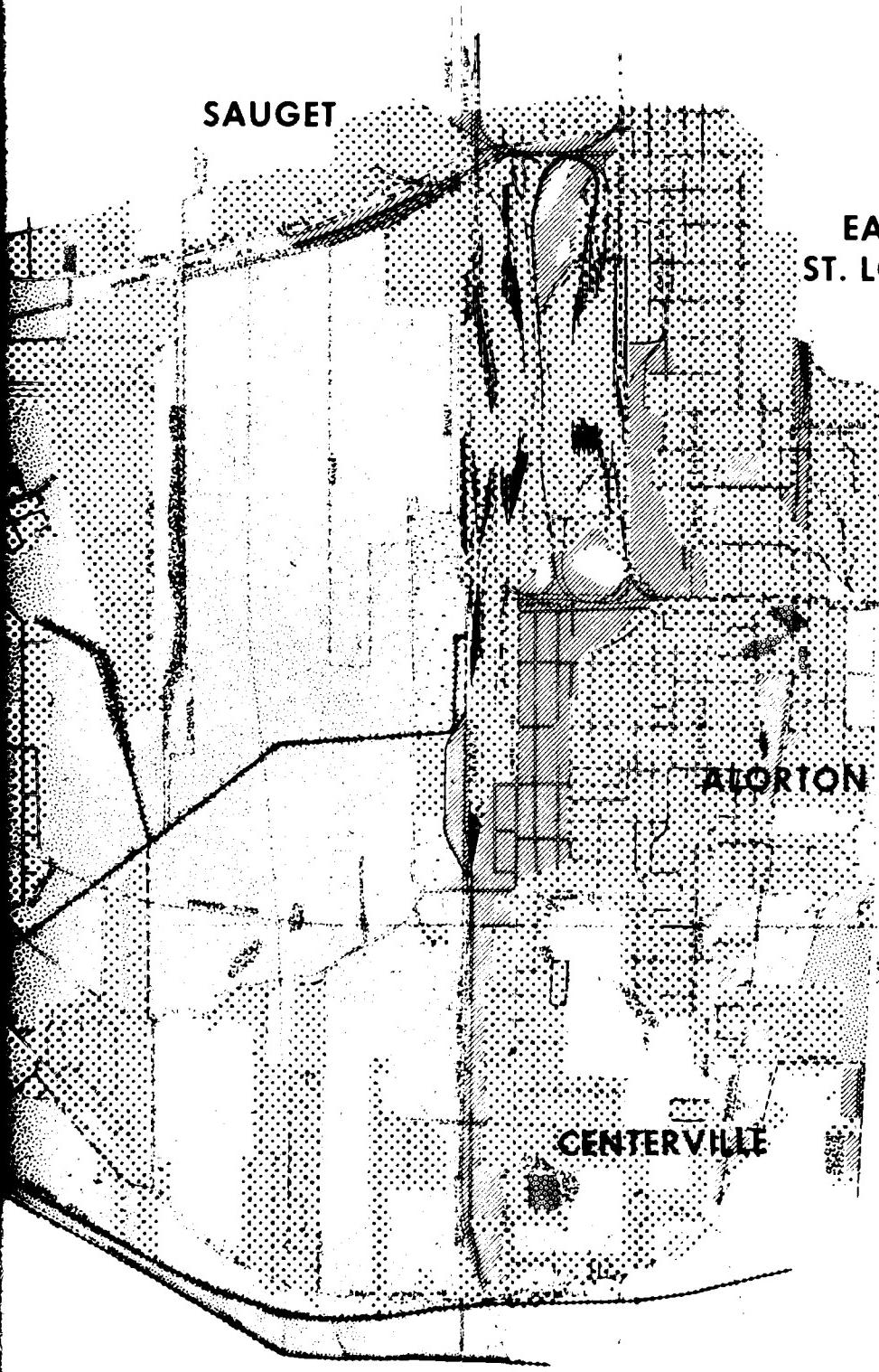
FOREST COVER

U. S. Army Engineer District, St. Louis
Corps of Engineers
St. Louis, Mo.

SAUGE

CAHOKIA





SCALE IN FEET
0 1000 2000

Legend

- [Dotted Pattern] Urban
- [White] Agricultural
- [Cross-Hatched] Old Fields
- [Solid Black] Woods
- [Stippled] Marsh
- [Dashed Line] Terrestrial Ditch
- [Solid Line] Aquatic Ditch
- [Small Rectangle] Ponds
- [Cluster of Dots] Parks & Recreation

SOURCES

- Field Study
- 1971 Air Photos Surdex Corporation

EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS
ENVIRONMENTAL STATEMENT

HABITAT TYPES

U.S. Army Engineer District, St. Louis
Corps of Engineers
St. Louis, Mo.

SAUGET
5023

5026.01

CAHOKIA

5026.02

5026.03

SAUGET
5023

5010

5011

SCALE IN FEET
0 500 1000 2000

5026.03

5027

ALORTON
5025

CENTREVILLE
5028

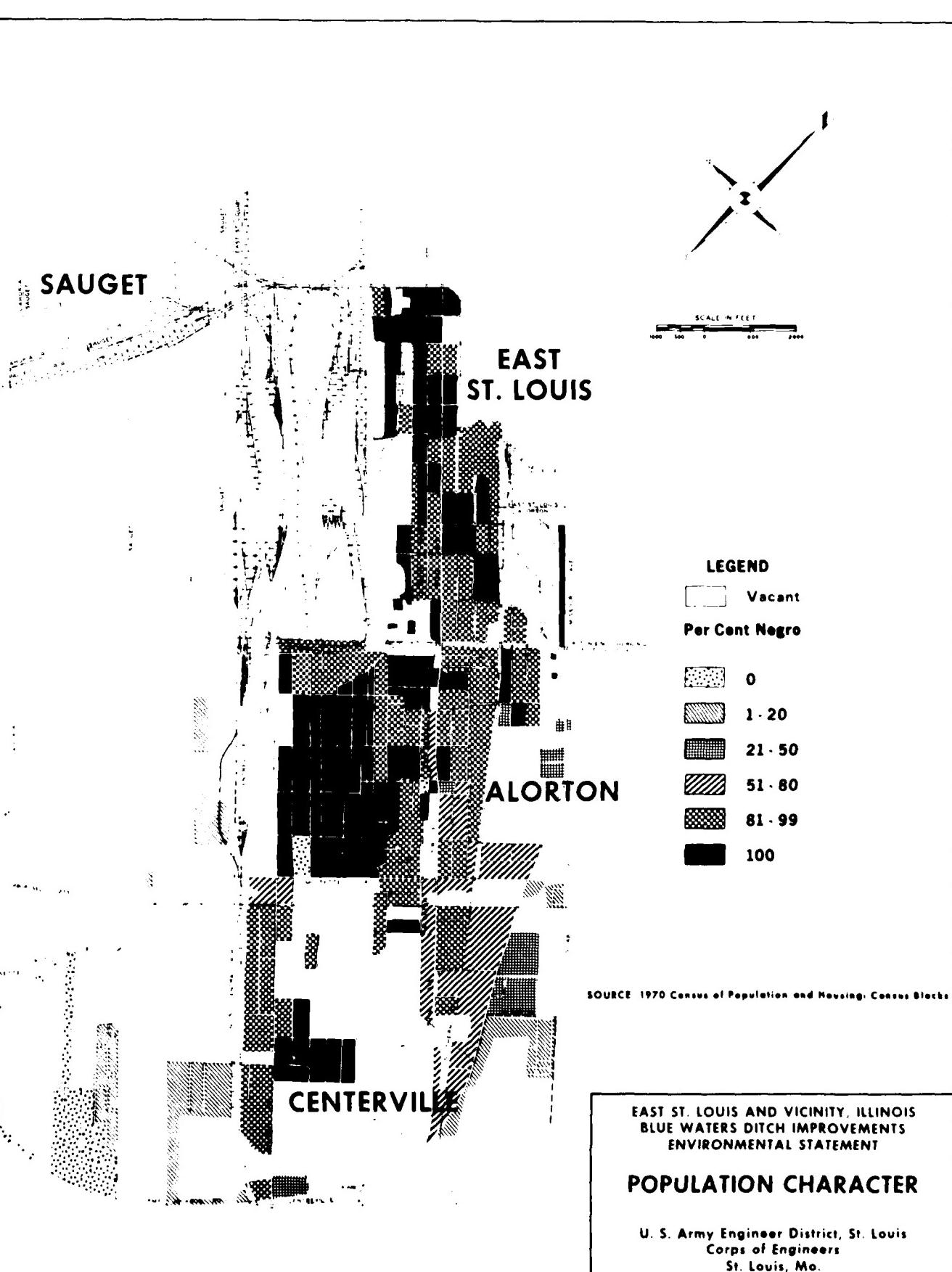
EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS
ENVIRONMENTAL STATEMENT

CENSUS TRACTS

U. S. Army Engineer District, St. Louis
Corps of Engineers
St. Louis, Mo.

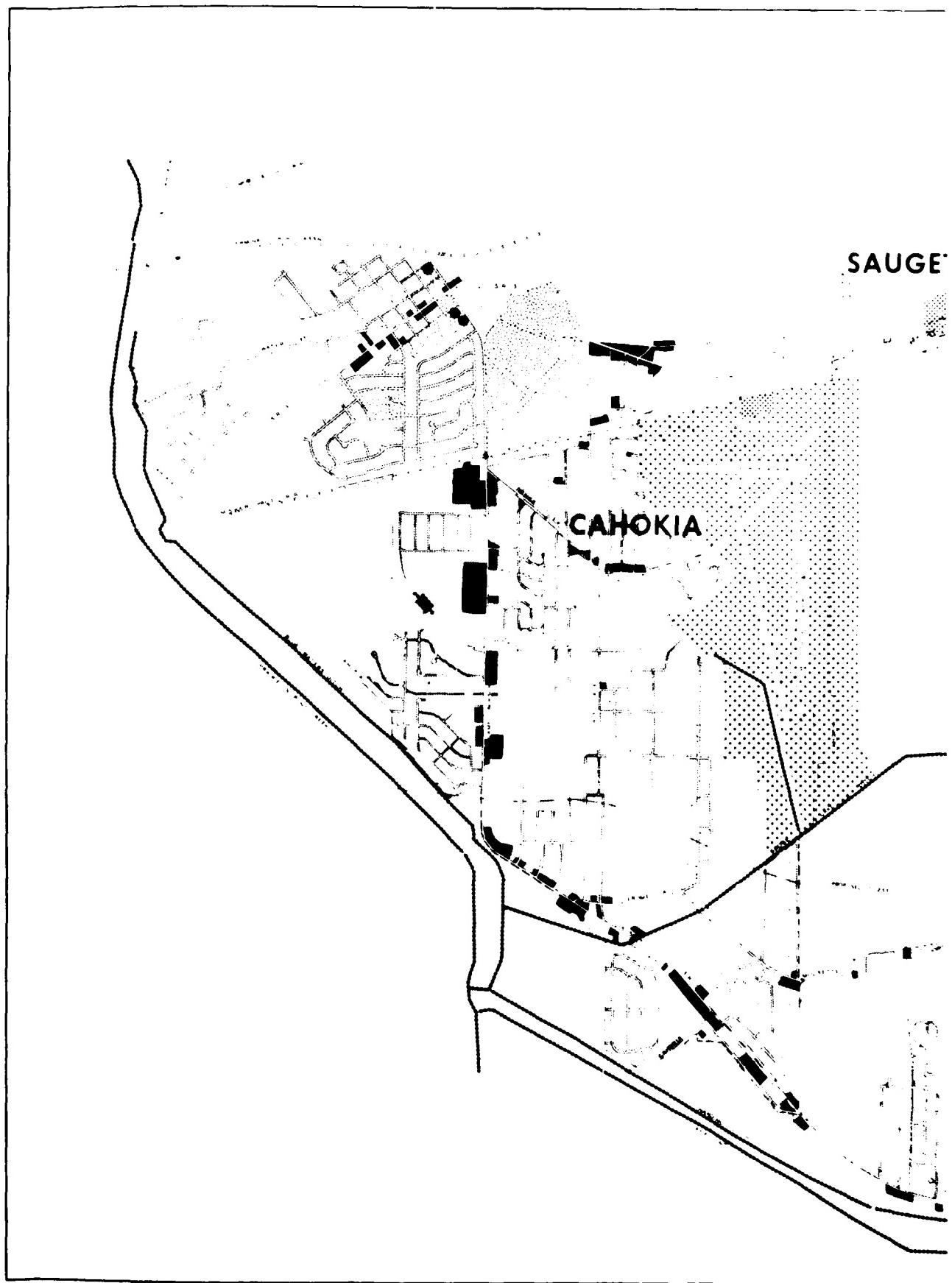
SAUGE

CAHOKIA



SAUGE

CAHOKIA

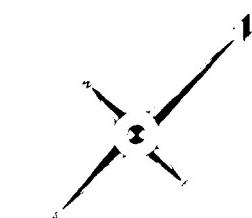


SAUGET

EAST
ST. LOUIS

ALORTON

CENTERVILLE



SCALE IN FEET
0 500 1000 1500 2000

Legend

- [White Box] Residential
- [Solid Black Box] Commercial
- [Dotted Box] Industrial
- [Hatched Box] Public & Semi-Public
- [Cross-hatched Box] Transportation
- [Line] Permanent Water
- [Circle] Structures Listed in the National Register of Historic Places
- [Empty Box] Agricultural or Vacant

SOURCES

Comprehensive Master Plan, Village Plan Commission, Cahokia, Ill., 1968 (Ladislao Segoe & Associates, Cincinnati); Plate 4

A Report Upon the Comprehensive Plan—Centreville, Illinois (Harland Bartholomew & Associates, July, 1965, Plate 2)

SIMAPC Existing Land Use Map - Alorton 1969

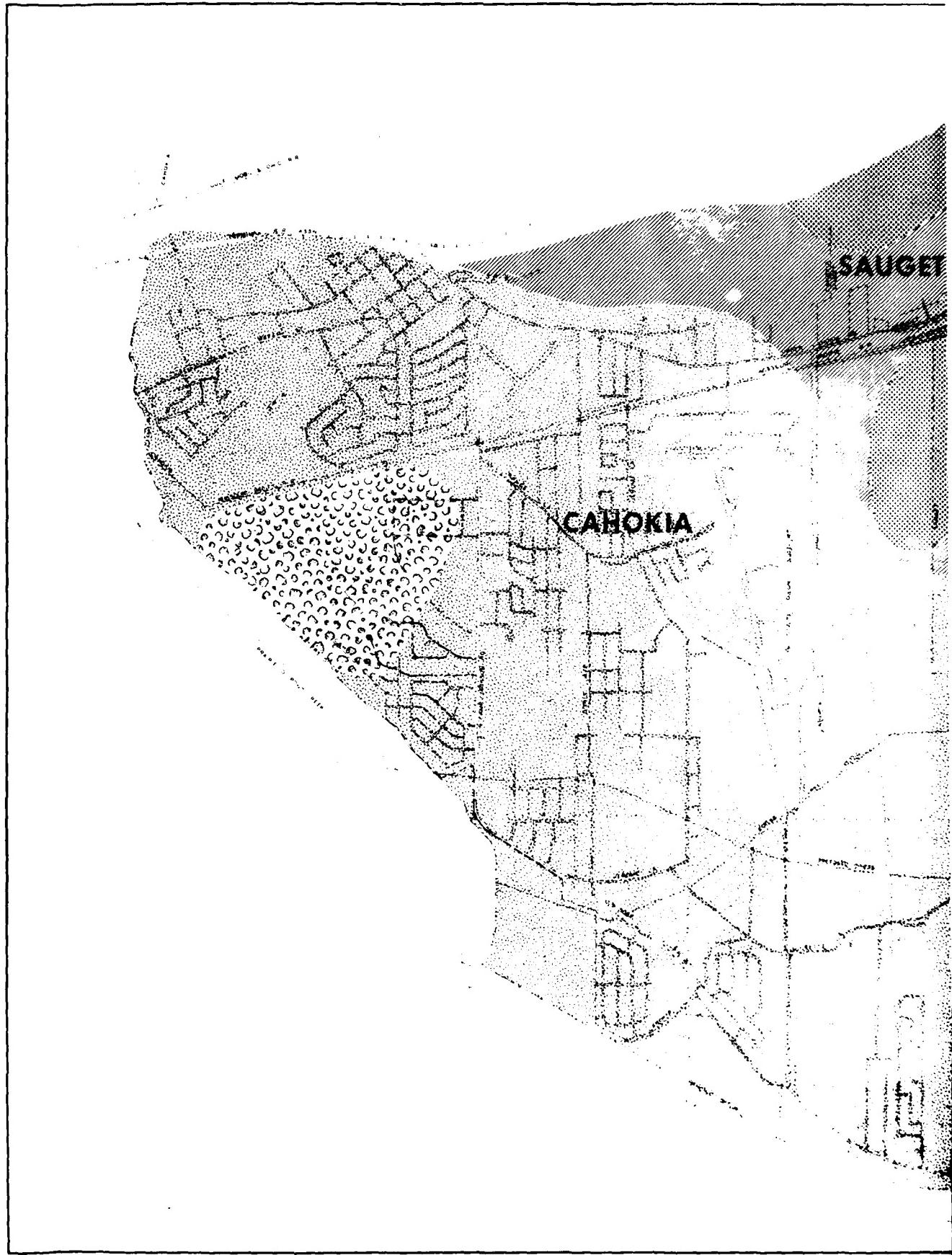
Planning Department, City of East St. Louis, Illinois — Existing Land Use, 1969

1971 Air Photos — Surdex Corp.

EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS
ENVIRONMENTAL STATEMENT

GENERALIZED EXISTING
LAND USE

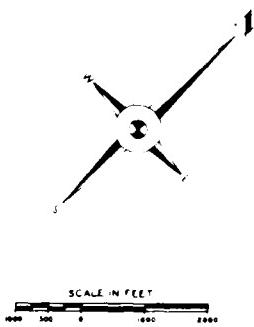
U. S. Army Engineer District, St. Louis
Corps of Engineers
St. Louis, Mo.



SAUGET

EAST
ST. LOUIS

MORTON
CENTREVILLE



LEGEND

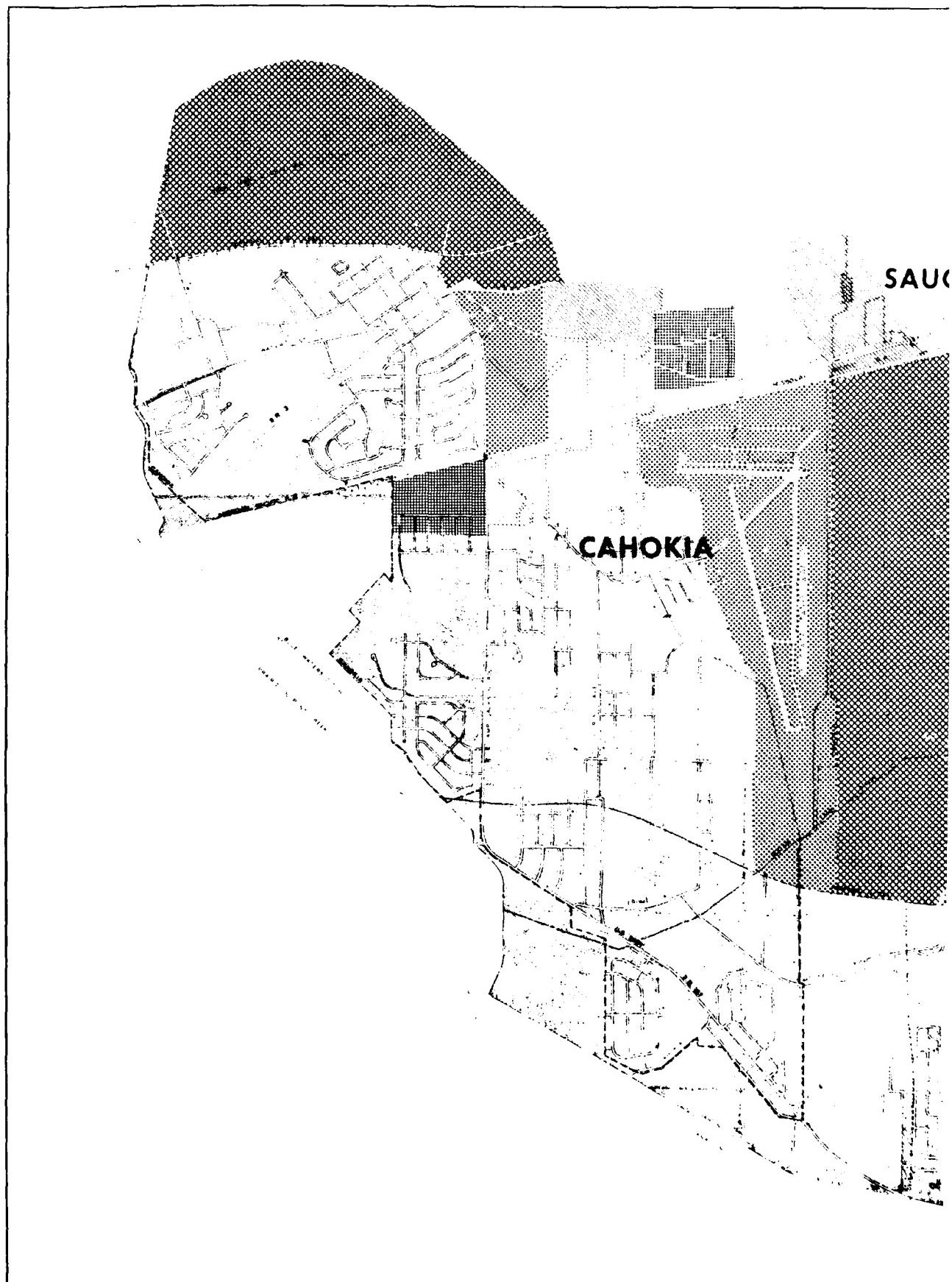
- [Solid black square] Regional Industrial
- [Square with diagonal lines] Recreational
- [Horizontal hatching] Suburban
- [Cross-hatching] Fringe

SOURCE

EAST - West Gateway Regional Land Use Plan, 1973

EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS
ENVIRONMENTAL STATEMENT
**EAST-WEST GATEWAY
REGIONAL LAND USE PLAN,
1973**

U. S. Army Engineer District, St. Louis
Corps of Engineers
St. Louis, Mo.



SAUGET

EAST
ST. LOUIS

ALORTON

CENTERVILLE

SCALE IN FEET
1000 500 0 500 1000

LEGEND

- [Light Gray Box] Low Density Residential
- [Medium Gray Box] Medium Density Residential
- [Dark Gray Box] High Density Residential
- [White Box with Black Lines] Commercial
- [White Box with Dots] Light Industry
- [Black Box] Heavy Industry

SOURCE

SIMAPC Land Use Plan St. Clair County December, 1969
Plate 4

EAST ST. LOUIS AND VICINITY, ILLINOIS
BLUE WATERS DITCH IMPROVEMENTS
ENVIRONMENTAL STATEMENT

SIMAPC LAND USE PLAN

U. S. Army Engineer District, St. Louis
Corps of Engineers
St. Louis, Mo.

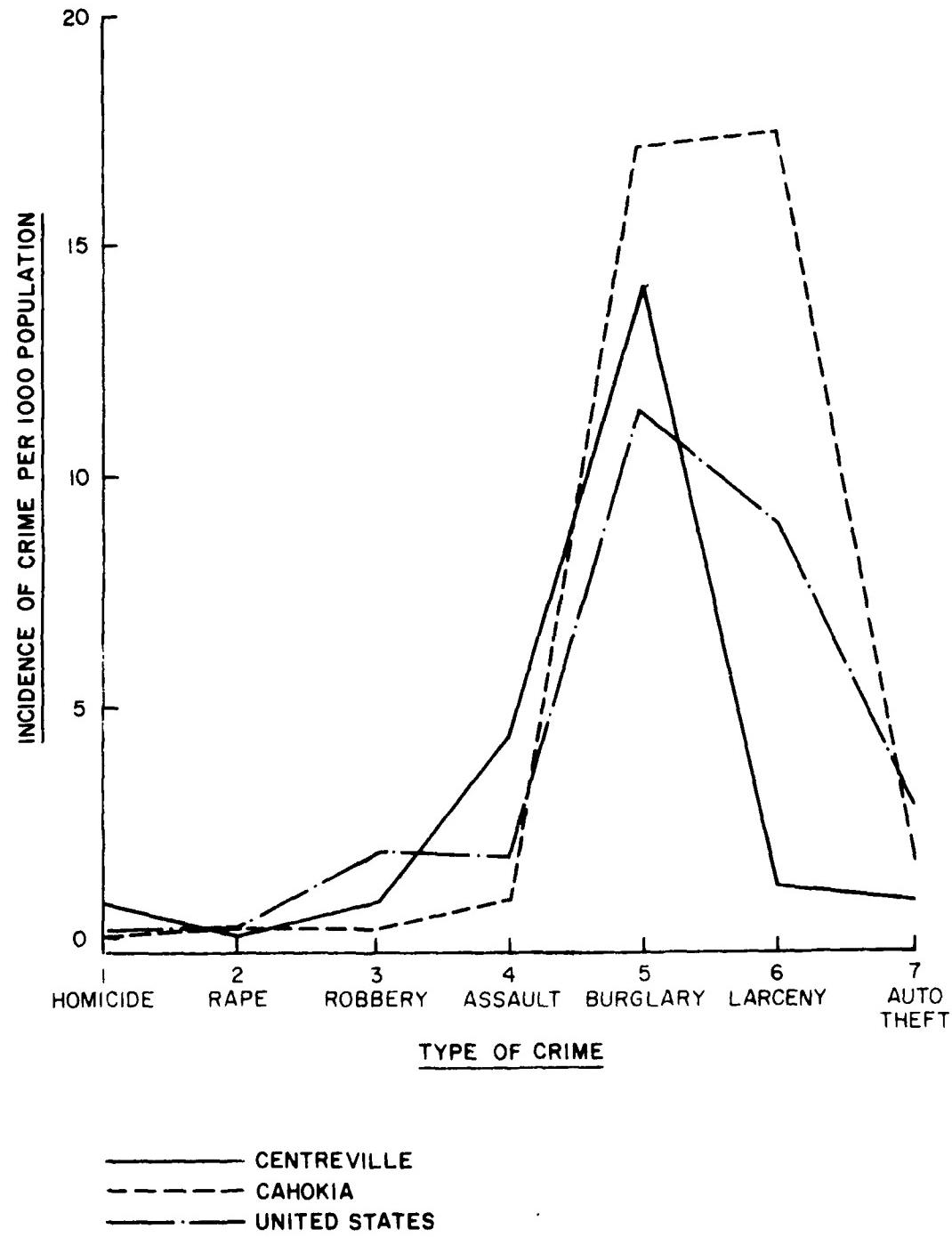


Fig. 10. 1960



Fig. 11. 1960

FIGURE 3 CRIME PATTERNS IN BLUE WATERS COMMUNITIES, 1972



SOURCES: FEDERAL BUREAU OF INVESTIGATION, UNIFORM CRIME REPORTS.
SOUTHWESTERN ILLINOIS LAW ENFORCEMENT COMMISSION.



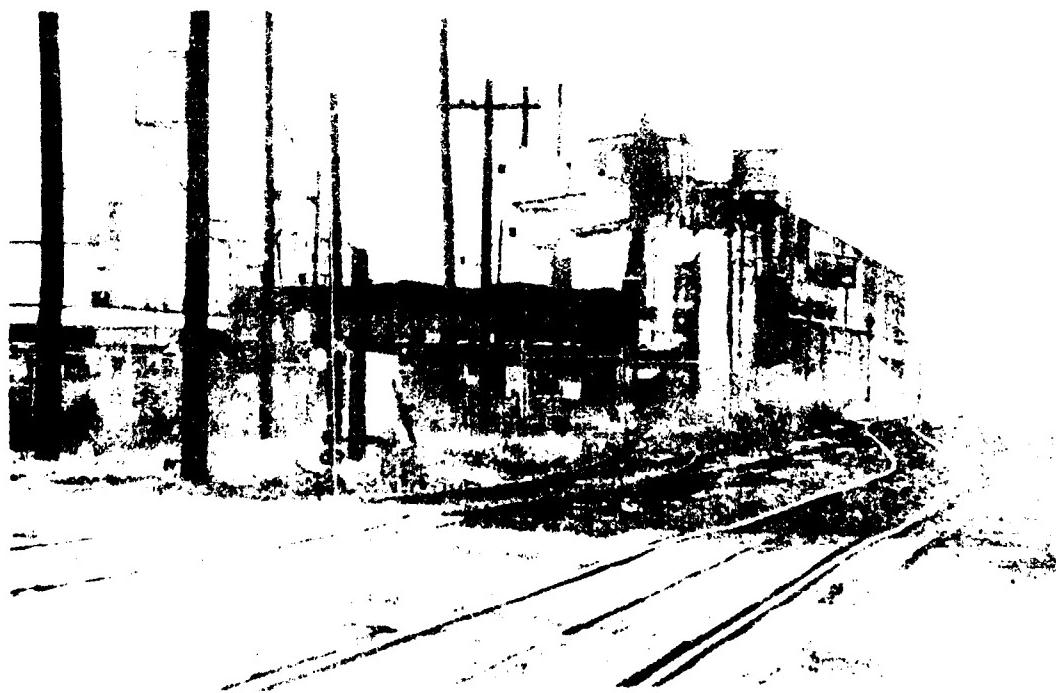
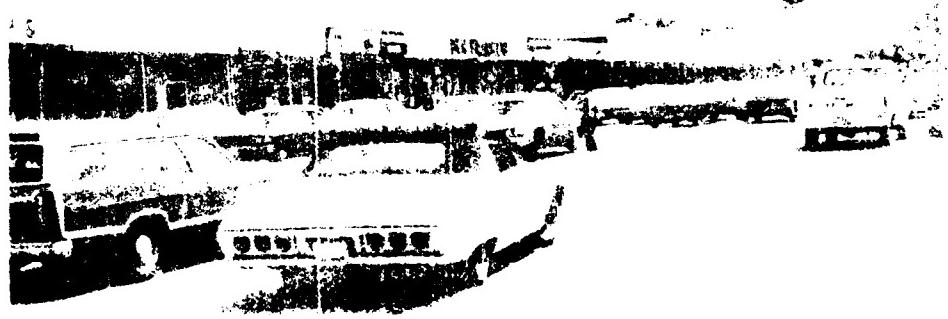


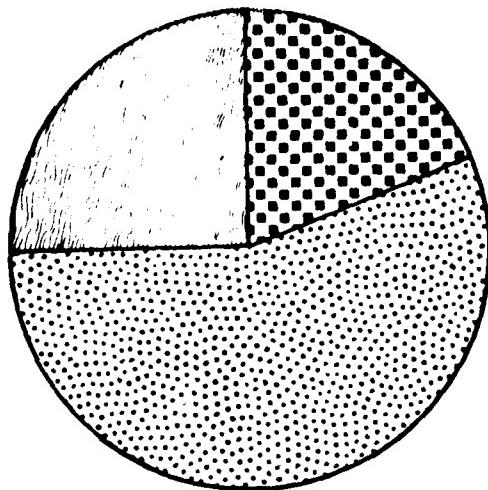


FIGURE 10

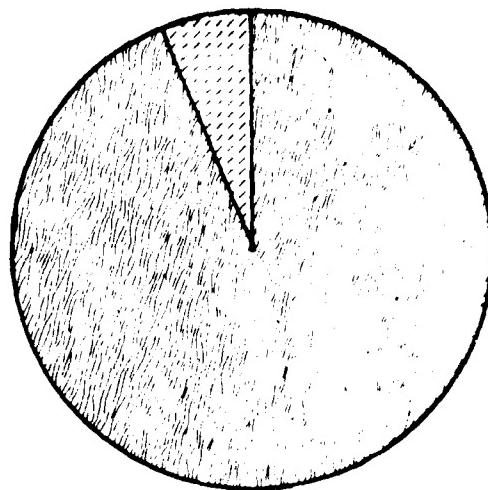
TYPE OF OWNERSHIP BY HARVESTED CROPLAND

BLUE WATERS AREA & ST. CLAIR COUNTY

ST. CLAIR COUNTY



BLUE WATERS



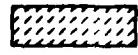
FULL OWNERSHIP



PART OWNERSHIP



TENANT



COMBINED CATEGORIES

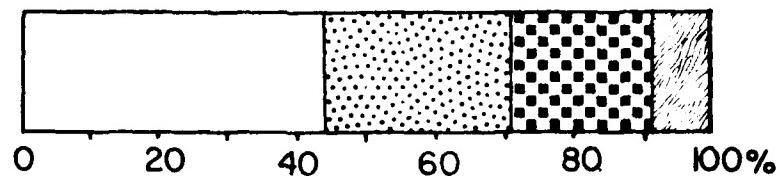
SOURCES: U.S. BUREAU OF THE CENSUS, CENSUS OF AGRICULTURE, 1969.
VOLUME I, AREA REPORTS.

ENVIRONMENTAL RESEARCHERS OF EDWARDSVILLE, ENVIRONMENTAL
INVENTORY REPORT, BLUE WATERS AREA, ST. CLAIR COUNTY, ILL. 1973

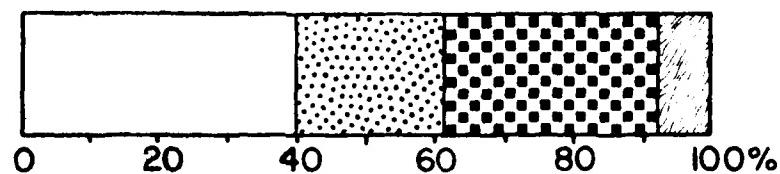
FIGURE 11

CROP PRODUCTION BY PERCENT OF TOTAL HARVESTED ACREAGE

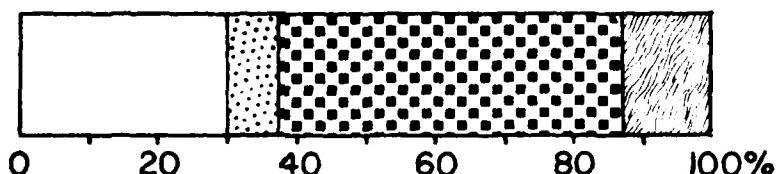
BLUE WATERS - 1972



ST. CLAIR COUNTY - 1969



ILLINOIS - 1969



SOYBEANS

WHEAT

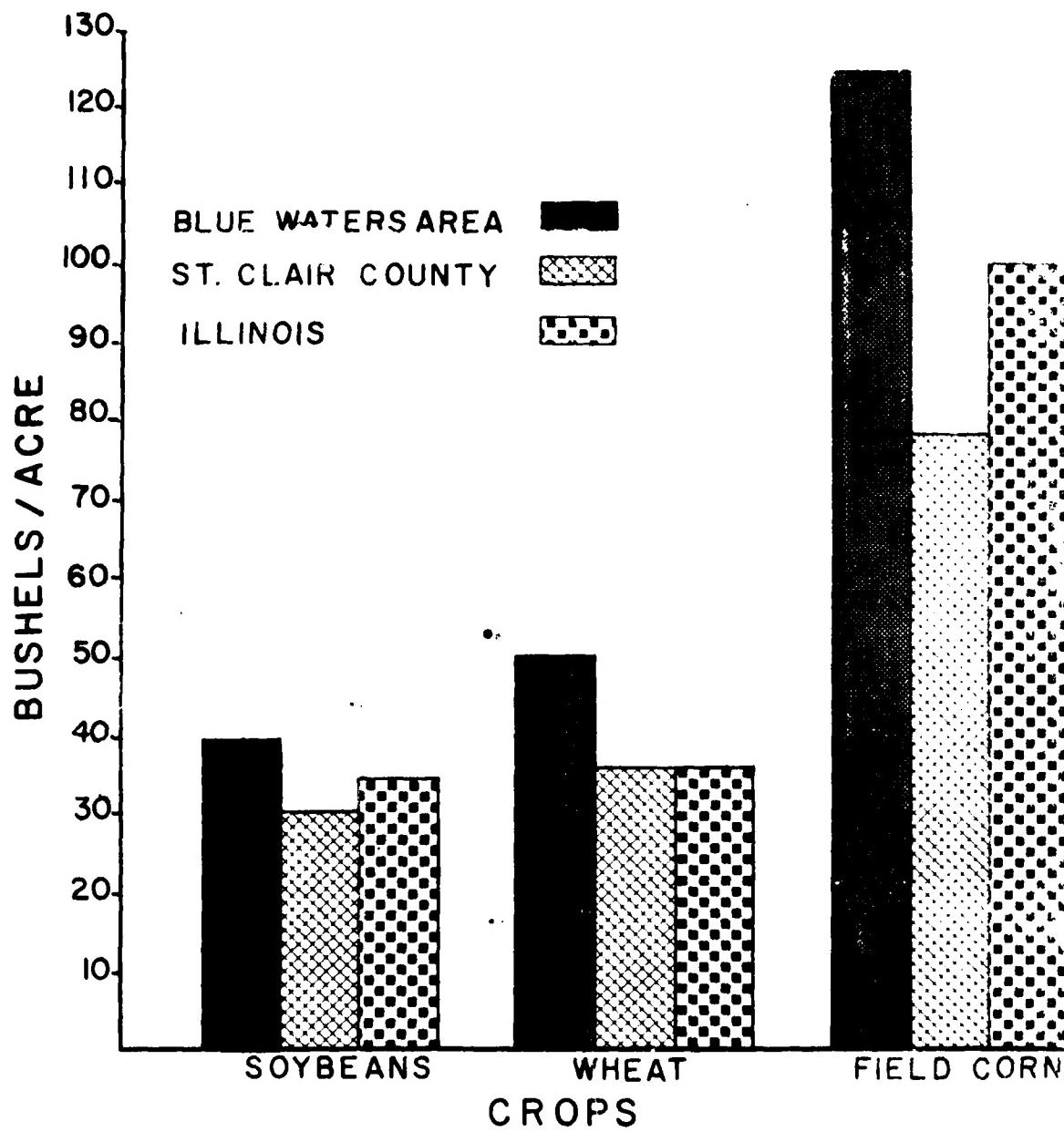
FIELD CORN

OTHERS

SOURCES: U.S. BUREAU OF THE CENSUS, CENSUS OF AGRICULTURE, 1969,
VOLUME I, AREA REPORTS.

ENVIRONMENTAL RESEARCHERS OF EDWARDSVILLE, ENVIRONMENTAL
INVENTORY REPORT, BLUE WATERS AREA, ST. CLAIR COUNTY, ILL. 1973.

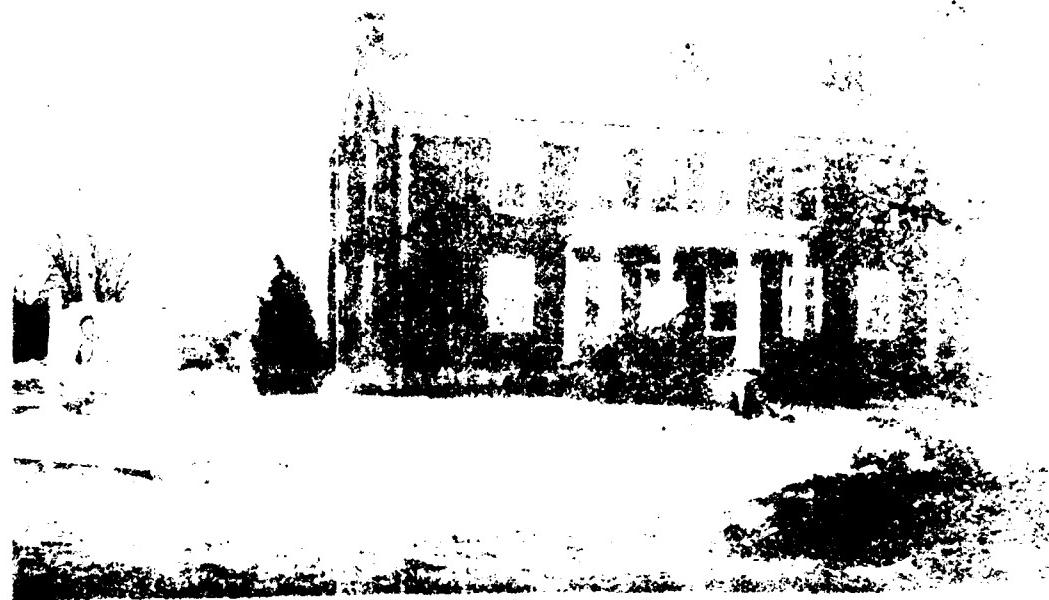
FIGURE 12 AVERAGE CROP YIELDS
BLUE WATERS AREA-1972, ST. CLAIR COUNTY-1969, &
ILLINOIS-1969



SOURCES: U.S. BUREAU OF THE CENSUS, CENSUS OF AGRICULTURE, 1970,
VOLUME I, AREA REPORTS.

ENVIRONMENTAL RESEARCHERS OF EDWARDSVILLE, ENVIRONMENTAL
INVENTORY REPORT, BLUE WATERS AREA, ST. CLAIR COUNTY, IL, 1973.





APPENDIX A

ECONOMIC DATA

APPENDIX A. ECONOMIC DATA, EXTRACTED FROM U. S. ARMY CORPS OF ENGINEERS
REEVALUATION REPORT, BLUE WATERS DITCH AREA. COMPLETE
DOCUMENT IS AVAILABLE AT U. S. ARMY ENGINEER DISTRICT,
ST. LOUIS, MISSOURI

ANNUAL COSTS

Federal	\$ 574,500
Non-Federal	81,000
O&M	54,000
Replacement	<u>7,500</u>
TOTAL	\$ 717,000

ANNUAL BENEFITS

Flood Control	\$ 841,000
Residential	29,000
Agricultural	7,000
Commercial	<u>91,000</u>
Affluence Factor	
TOTAL	\$ 968,000

Benefit to Cost Ratio = 1.4 to 1.00
at 6-1/8% interest

APPENDIX B

1975 PROPOSED PLAN OF IMPROVEMENT

1975 PLAN OF IMPROVEMENT

Ditches, Bridges, and Culverts

Approximately 15 miles of channel will be improved or constructed in the proposed project plan. In addition to construction of adequate channel sizes to carry expected flows during a 100-year frequency flood, additional regulations will be required to insure that greater frequency floods will not damage any future adjoining structures. Channel rights-of-way, in some cases, could be used as greenbelt corridors to provide outdoor recreation facilities and open space in the Blue Waters area. The design of the channels will incorporate such measures as landscaping and architectural treatment to mitigate adverse effects of construction on the project land. Main stem ditches were designated to permit use of the natural storage areas which allows a reduction in the size of pumping capacity required for the project. Lateral ditches were to be compatible with proposed storm sewer improvements as well as the main stem ditches. Improvements to existing ditches will consist of widening the bottom widths where necessary and general shaping and dressing of the channel invert and side slopes. All ditches will have three horizontal (3H) and one vertical (1V) side slopes unless as noted below where different channel geometry was selected to avoid extensive relocation. The extent of channel improvements, bridges, and culverts is described below.

a. Blue Waters Ditch. Improvements will consist of excavation of portions of the existing Blue Waters Ditch designed to meet the following criteria: (1) between the gravity drain (STA. 1384 + 40) and the proposed pump station, a distance of about 4,900 feet, the ditch will have a 60-foot bottom with 3 horizontal (3H) and 1 vertical (1V) side slopes; (2) between the proposed pump station and Goose Lake Ditch, a distance of 5,900 feet, a 80-foot bottom channel will be constructed. The existing Triple Lakes Road Culvert will be replaced by a bridge with 2 horizontal (2H) or 1 vertical (1V) side slopes; and (3) between Goose Lake Ditch and South Pumping Station, a distance of about 1,800 feet, the ditch will have a 50-foot wide bottom with 3H and 1V side slopes. Much of the ditch already conforms to this size and excavations will be minor.

b. Goose Lake Ditch. Improvements will consist of the following: (1) enlargement of the ditch from Blue Waters Ditch to Bi-State Airport, a distance of 7,500 feet will require an 80-foot bottom and two new bridges replacing existing culverts at State Highway 157 and Mousette Lane; (2) from Bi-State Airport to the intersection with the Illinois Central Railroad (I.C.R. .) Ditch, a distance of 4,500 feet, a 60-foot bottom is required. The existing culvert at the farm road crossing 3,600 feet upstream from Mousette Lane will be replaced with a bridge.

c. South Cahokia Ditch and Ditch "C". Minor remedial work will

be required on the South Cahokia between the Illinois Pacific Railroad and Water Street, a 30-foot bottom is required. An additional will be constructed under Water Street. Approximately 1,000 feet west of Water Street, a new ditch, Ditch "C", approximately 1,000 feet long, and with 16-foot bottom width with 3H and 1V side slopes, will be built. The existing ditch between Water Street and Ditch "C" will be enlarged to a 10-foot bottom width with 3H on 1V side slopes. A new ditch with a 4-foot bottom width and 3H and 1V side slopes will extend from the junction of South Cahokia Ditch and Ditch "C" northeasterly for about 1,100 feet ending about 670 feet southeast of the Illinois Terminal Railroad. An additional culvert will be placed under the Missouri Pacific Railroad.

d. Jerome Lane Ditch. The Jerome Lane Ditch will have a 20-foot bottom width from Goose Lake Ditch to the first upstream field crossings, a distance of 5,100 feet. The two field culverts will be replaced by two, 7- by 7-foot reinforced concrete box culverts. The ditch will narrow to a 16-foot bottom width with IV to 1V side slopes from the field culvert to the Bi-State Airport property and then to 1,200 feet with IV to 3H side slopes to the Missouri Pacific Railroad. From the steeper side slopes resulting from underground sanitary sewer lines which restrict the right-of-way. The cost of riprap protection for these side slopes was more economical than modifying the sanitary sewer system. The St. Louis Gardens subdivision culvert will be replaced by a concrete 10-foot reinforced concrete box culvert. The field culvert, 2,000 feet upstream of the subdivision culvert, will be removed. The Bi-State Airports airport entrance crossing will be replaced with a 66-inch as-burdened metal pipe (CMP).

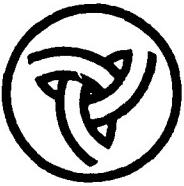
e. Missouri Pacific Ditching, (18 pages) The existing Missouri Pacific Ditch, West, will not be discontinued from Blue Waters Ditch to approximately the south edge of St. Joseph Gardens Subdivision. Upstream of the end of this west ditch, a new ditch with 6-foot bottom and 1V on 3H side slopes will extend about 1,200 feet to a point near the southeast corner of St. Joseph Gardens Subdivision. The Missouri Pacific Ditch, east, will have a 6-foot bottom width and 1V side slopes and will extend from Blue Waters Ditch a distance of approximately 6,400 feet. From this point the ditch will be extended to a 108-inch pipe approximately 630 feet to Camp Jackson Road.

f. Lily Lake Ditch. The lower end of Lily Lake Ditch will be routed through the Blue Water Detention area a distance of about 3,000 feet. A ditch with a 10-foot bottom width and 1V to 3H side slopes will be constructed from Blue Waters Ditch across Camp Jackson Road, almost to Doris Avenue, a distance of about 7,200 feet. Two small culverts will be required at Camp Jackson Road. No modification to the small recreational lake located downstream of Camp Jackson Road will be required.

g. Highway 3 Ditch. A 6-foot wide bottom ditch with 3H and 1V side slopes will extend from South Cahokia Ditch to the base for a distance of about 4,800 feet.

APPENDIX C

LETTER OF INTENT



Illinois Department of Transportation

Division of Water Resources
2300 South Dirksen Parkway/Springfield, Illinois/62764

September 21, 1976

Colonel Leon E. McKinney
District Engineer
U.S. Army Engineer District
St. Louis
210 North 12th Street
St. Louis, Missouri 63101

Dear Colonel McKinney:

This is to affirm that the State of Illinois supports the reformulated plan of improvement for the Blue Waters Ditch segment of the East St. Louis and Vicinity interior flood control project as defined in the Draft Reevaluation Report dated July 1976, and intends to serve as local sponsor for this segment.

The State is aware that such sponsorship will entail furnishing, prior to construction, formal assurances, satisfactory to the Secretary of the Army, that it will:

a. Provide without cost to the United States all lands, easements, and rights-of-way necessary for construction of the project;

b. Hold and save the United States free from damages due to the construction, operation or maintenance of the project, excluding damages due to the fault or negligence of the United States or its contractors;

c. Accomplish without expense to the United States all relocations of and modifications to highway bridges, streets, roads, sewers, and utilities;

d. Maintain and operate all the works after completion including removal of silt and debris from impoundment areas and channels in accordance with regulations prescribed by the Secretary of the Army;

Colonel Leon E. McKinney

-2-

September 21, 1976

e. Prevent encroachment on improved channels, ponding areas, and detention areas, and if encroachment occurs or capacities are impaired, provide substitute storage or equivalent pumping capacity promptly without cost to the United States; and

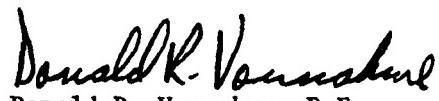
f. At least annually notify interests affected that the project provides partial protection from the larger floods; and

g. Comply with all applicable provisions in the Uniform Relocation Assistance and Real Property Acquisition Act of 1970; and

h. Comply with the provisions of Section 221 of Public Law 91-611.

The State of Illinois intends to apply its flood plain regulation authority to preserve the storage capacity depicted on Plate 8 of the Reevaluation Report and entitled "100-Year Flood Outline with Recommended Improvements in Place". As shown on this plate, the affected area amounts to approximately 1900 acres.

Sincerely,


Donald R. Vonnahme, P.E.
Assistant Director

APPENDIX D

LETTERS OF REVIEW
MARCH 1974



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
1 NORTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

May 13, 1974

Colonel Thorwald R. Peterson, District Engineer
U.S. Army Engineer District, St. Louis
210 North 12th Street
St. Louis, Missouri 63101

Dear Colonel Peterson:

In response to your letter of March 14, 1974, we have reviewed the Draft Environmental Impact Statement (EIS) and the supporting environmental inventory for the Blue Waters Ditch Improvements, East St. Louis and Vicinity, Illinois. We have classified our comments as Category ER-2. Specifically, this means we have reservations about the impacts of the proposal, particularly concerning secondary impacts. We believe secondary impacts should be discussed in more detail and further consideration should be given to implementing the alternative of relocation and zoning. This classification and the date of our comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on Federal actions under Section 309 of the Clean Air Act. We offer the following comments:

The EIS and supporting environmental inventory provide a well-balanced and well-documented report on the Blue Waters area. While the proposed ditching and pumping of flood waters will make it possible for flood waters to be reduced, thus providing limited benefits to residents, the project directs the ultimate future of the area towards further development. The EIS should address the question of encouraging further development in an area with strong natural constraints against it.

Considering the levels of air and noise pollution presently found in the project area and the overall quality of life that many of the residents experience, the relocation of the flood stricken residents may have considerable merit. The alternative of relocation and zoning appears in many respects to be a more desirable course of action. The adverse social impacts appear to discourage this course of action; however, the EIS does not consider measures to minimize these adverse impacts. The Final EIS should include potential measures that could be utilized to minimize adverse effects resulting from the selection of this alternative.

Colonel Thorwald R. Peterson, District Engineer
U.S. Army Engineer District, St. Louis

Adverse social impacts associated with the proposed action should be addressed. By providing adequate drainage in the project area for residential and industrial development, the existing characteristics of the area will change considerably. Many of the present residents may be displaced regardless of efforts not to relocate them as land values shift upward. Thus, the proposed project may be the first step in a sequence of events that will ultimately lead to relocation. A detailed discussion relating to long-term productivity should be provided for the proposed action and the relocation zoning alternative. This discussion should include consideration of secondary impacts.

4

Because the relocation/zoning alternate appears to be a viable and effective approach to the problem consistent with Executive Order 11296, we believe that the Final EIS should address it in considerably more detail. Additional information should be provided on the conditions of the housing subject to flooding, market values, and the number of residences that could be considered substandard. Representative photographs depicting some of the residences that would be required to relocate (if the relocation alternative were to be implemented) should be provided.

5

We appreciate the opportunity to review this Draft EIS and we thank your staff for assisting us in our field review on November 19, 1973.

Sincerely yours,

Davy A. Williams

for Donald A. Wallgren
Chief, Federal Activities Branch



(ER-74/383)

United States Department of the Interior

OFFICE OF THE SECRETARY

NORTH CENTRAL REGION
536 SOUTH CLARK STREET
CHICAGO, ILLINOIS 60605

May 10, 1974

Col. Thorwald R. Peterson
District Engineer
U. S. Army Engineer District
St. Louis
210 North 12th Street
St. Louis, Missouri 63101

Dear Col. Peterson:

This is in response to the request of March 14, 1974, from your office for a Department of the Interior review of the draft environmental statement for Blue Waters Ditch Improvements, East St. Louis and Vicinity, Illinois.

On the basis of our review of the statement in areas of our jurisdiction and expertise we believe that the following comments should be addressed in the final statement:

GENERAL COMMENTS

This draft statement does not adequately describe the existing environment of the project area particularly as it pertains to fish and wildlife resources. The first sentence on page 68 states that biological impacts are expected to be minimal, since little of the natural environment remains. However, we would like to point out that any habitat which still exists in an urbanized area becomes relatively more significant and thus should merit serious discussion and quantification in the environmental statement.

We question, too, whether the intent of the Fish and Wildlife Coordination Act has been reflected in project formulation. The Act not only calls for the conservation of wildlife resources by preventing damages, but also provides for their development and improvement. The floodwater detention areas proposed for the East St. Louis and Vicinity project will degrade about 2,000 acres of wetlands. Yet, no permanent surface water will be established in these detention areas to offset project-caused losses of fish and wildlife habitat.

Land acreage associated with the Goose Lake and Blue Waters detention areas alone totals 850 acres. These areas currently contain a large portion of the remaining wetlands in the project area and, according to page 68 of the statement, will be preserved as agricultural open space, which we assume to be "cropland".

2

3

Moreover, it is possible that this project will give the local sponsors the opportunity to drain the entire Blue Waters area with no planning agency safeguards built in to protect wildlife values. Considering that there is a limited amount of permanent surface water in the Blue Waters area and that there is a recognized regional need for recreation, wildlife, and related activities, we believe that the following features would preserve fish and wildlife values in the project area:

- (1) Permanent water storage could be provided in the Blue Waters and Goose Lake detention areas. This could be developed behind the proposed pumping station. Silt could be prevented from accumulating in these pools by trapping it in the ditches for subsequent disposal off the floodplain in non-wetland areas.
- (2) Existing stands of trees could be preserved wherever possible. This could be accomplished by re-routing ditches if necessary. Trees could be left standing in the detention areas. As can be seen in the maps provided, forest habitat is at a premium in the Blue Waters area and most either lies in the path of an improved ditch or in flood detention areas.
- (3) The local sponsor could be required to preserve wildlife values in the project area, avoiding indiscriminate clearing and burning along the ditches during annual maintenance. The ditch banks could be allowed to return to natural vegetation or planted with suitable wildlife cover.
- (4) The Corps could encourage local participation in cost sharing programs to enhance wildlife values wherever possible.

Although the need for general recreational facilities is apparent, the statement only alludes to this need and does not adequately discuss the subject. Recreation can and should be an integral part of this project. Such specific uses as trails and parks, should be related to the project and the impacts of such development on the overall environmental setting should be discussed.

The project will have no foreseeable environmental impact on the mineral resources of the area, although the environmental statement should include the material on minerals from page II-7 of the environmental inventory report.

4

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SPECIFIC COMMENTS

PART ONE: PROJECT DESCRIPTION

IV. PLAN OF IMPROVEMENT IN THE BLUE WATERS AREA

C. Re-evaluation of the Authorized Plan.

3. Fish and wildlife management.

Page 10 indicates that increased degradation to land and water habitat is occurring. The statement should indicate that the land use changes which are destroying habitat have in part resulted from the security afforded by early flood protection works along the Mississippi River and will be accelerated by the proposed project in areas not needed for flood control purposes. Since section 2. Recreation correctly assesses the latent demand for outdoor recreation facilities in the area, we suggest that this paragraph be amended to discuss the need for increased opportunities for consumptive and non-consumptive wildlife uses.

D. The Proposed Plan of Improvement.

2. Ditches, bridges, and culverts.

In the discussion of the proposed ditches, it would be helpful to the reviewer if the average water depths in the "improved ditches" were given. This section should be expanded to include a description of existing ditches to be modified by the project.

Four new bridges across drainage ditches are proposed at the present site of the Triple Lake Road culvert, the State Highway #157 culvert, the Jerome Lane culvert, and the Illinois Central Railroad culvert (page 13). However, the only information provided on these bridges is their approximate locations. It would be advisable to include in the environmental statement information on the foundation conditions and general size and design of the principal bridges.

PART TWO: ENVIRONMENTAL SETTING WITHOUT THE PROJECT

I. PHYSICAL ENVIRONMENT

E. Hydrological Elements.

1. Existing surface water.

The section states that at present there is a limited amount of permanent surface water in the area (page 24). We suggest the section be revised to include a listing of surface water features with acreages and average depths included.

4. Water quality.

This section on page 26 states poor water quality will preclude swimming in the Blue Waters area, which implies excessively high fecal coliform levels. We suggest that the source of this contamination be addressed. Is it agricultural runoff or municipal sewage? It appears that the U. S. Environmental Protection Agency will declare levee and drainage district pumping stations as point-source discharges of waste water. If this is the case, the coliform levels would have to be reduced before discharged to the Mississippi River. Therefore, it would be more beneficial to treat the water at the source and thereby allow for an increased recreational potential. We suggest expanding the section to address this point.

II. BIOLOGICAL ELEMENTS

A. Introduction.

While we agree, man's influence has had considerable adverse impact on the wildlife habitat base in the Blue Waters area (page 29), this only serves to make remaining habitat more valuable. We suggest that this point be brought out in the introduction.

B. Biological Communities.

2. Present habitat types.

In general, the discussion of existing habitat types on pages 30 through 33 is adequate; however, we suggest that the total acreage of each habitat type be provided. This should not be difficult because it appears that some of the information is contained in the "Environmental Report".

III. SOCIO-CULTURAL ENVIRONMENT

D. Land Use.

3. Agriculture.

b. Farm operators.

Page 55 points out that transportation improvements such as Illinois I-55 and the Columbia-Waterloo Airport, plus related urban expansion are instrumental in the on-going de-agriculturalization of the area. We believe that flood control works, particularly in urban areas, also play a major role in influencing land use change. In areas of urban expansion, as the farm land acreages decrease, so do wildlife populations. The paragraph should point out that flood control projects are at least as important in influencing land use patterns as the proposed transportation developments.

PART THREE: ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

I. IMPACT ON PHYSICAL ASPECTS OF THE ENVIRONMENT

A. Impact of Construction.

Apparently environmental protection provisions will be incorporated, such as prevention of unnecessary damage to trees (page 66). We suggest that all existing tree stands be left undisturbed, particularly those along ditches and in the proposed detention areas. These trees will provide shade along the ditches and cover for some wildlife species. Stands in the detention areas, if permanently flooded, provide excellent cover and feeding areas for fish. If not flooded, they will provide wildlife habitat and aesthetic appeal.

B. Impact of the Project.

This section on page 66 should quantify the impact on the habitat types previously described under the "Environmental Setting Without the Project". It states that the project would destroy some existing, low-lying, poorly drained, often flood-prone land forms which have disconnected drainage patterns. If these "land forms" are wetlands, we suggest typing them by criteria provided in Bureau of Sport Fisheries and Wildlife's Circular 39, "Wetlands of the United States" and enumerating the loss.

The only reference to disposition of spoils appears to be the mention of "mounding the earthwork spoil areas". However, no information has been provided on the approximate total volume of material to be excavated from the 15 miles of proposed channel improvement, on the planned method of disposition of this material, or on the location of the spoil areas referred to above. We suggest that this information be included in the final statement.

PART FOUR: ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED
SHOULD THE PROPOSAL BE IMPLEMENTED

This section should include a discussion of the number of acres of wildlife habitat, of each type, which will be destroyed compared with what will replace it--in effect, determining the net loss.

PART FIVE: ALTERNATIVES TO THE PROPOSED ACTION

From a fish and wildlife standpoint, we are concerned over the elimination of the relocation alternative. We cannot agree that moving 65 families is a massive relocation project. In an urban area the size of metropolitan St. Louis, would an additional 65 families really have an urbanization effect? If 65 relocations is considered massive,

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under what circumstances would this alternative ever be considered?
We wish to point out that residential development is not always a
desirable use of the floodplain, and encouraging this development
at the expense of wildlife habitat is even less desirable when economically
feasible alternatives exist.

20

PART SIX: THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S
ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY
and PART SEVEN: ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF
RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT
BE IMPLEMENTED

21

The number of acres of land required for the ditches should be made
consistent, as it is given as 100 acres on page 87 but as 150 acres
on page 88.

Sincerely,

Carol F. Dennis
for Madonna F. McGrath
Staff Assistant to
the Secretary

AD-A116 029 ARMY ENGINEER DISTRICT ST LOUIS MO
EAST SAINT LOUIS AND VICINITY, ILLINOIS, BLUE WATERS DITCH IMPR--ETC(U)
JUN 78

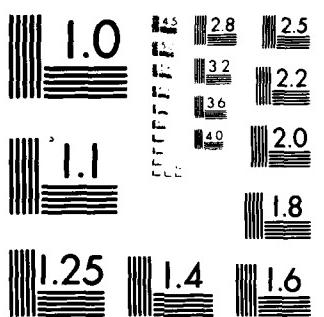
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UNCLASSIFIED

3 of 3
MAY 20 1978

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS

**Advisory Council
On Historic Preservation**

1522 K Street N.W. Suite 430
Washington D.C. 20005

April 22, 1974

Mr. Arthur L. Johnson
Acting Chief, Engineering Division
St. Louis District
Corps of Engineers
U.S. Department of the Army
210 North 12th Street
St. Louis, Missouri 63101

Dear Mr. Johnson:

This is in response to your request of March 14, 1974, for comments on the environmental statement for the proposed Blue Waters Ditch Improvement, East St. Louis and Vicinity, Illinois. Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Advisory Council on Historic Preservation has determined that while you have discussed the historical, architectural, and archeological aspects related to the undertaking, the Advisory Council needs additional information to adequately evaluate the effects on these cultural resources. Please furnish additional data indicating:

Compliance with Executive Order 11593 of May 13, 1971.

1. In the case of land under the control or jurisdiction of the Federal Government, a statement should be made as to whether or not the proposed undertaking will result in the transfer, sale, demolition, or substantial alteration of potential National Register properties. If such is the case, the nature of the effect should be clearly indicated.
2. In the case of lands not under the control or jurisdiction of the Federal Government, a statement should be made as to whether or not the proposed undertaking will contribute to the preservation and enhancement of non-federally owned districts, sites, buildings, structures, and objects of historical, archeological, architectural, or cultural significance.

To insure a comprehensive review of historical, cultural, archeological, and architectural resources, the Advisory Council suggests that the environmental statement contain evidence of contact with the appropriate State Historic Preservation Officer and that a copy of his comments concerning the

2

D-9

2

effects of the undertaking upon these resources be included in the environmental statement. The State Historic Preservation Officer for Illinois is Mr. Anthony T. Dean, Director, Department of Conservation, 102 State Office Building, 400 South Spring Street, Springfield, Illinois 62706.

Should you have any questions or require any additional assistance, please contact Jordan Tannenbaum, at 202-254-3974, of the Advisory Council staff.

Sincerely yours,

Myra L. Harrison
Ann Webster Smith ~~for ALC~~
Director, Office of Compliance

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
NORTHEASTERN AREA, STATE AND PRIVATE FORESTRY
6816 MARKET STREET, UPPER DARBY, PA. 19082
TELEPHONE (215) ~~XXXX~~ 597-3772

8400
April 12, 1974



Mr. Arthur L. Johnson
Acting Chief, Engineering Division
St. Louis District, Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101

Refer to: LMSED-BR

Dear Mr. Johnson:

Reference is made to your circular of March 14 transmitting two copies of the Draft Environmental Statement for Blue Waters Ditch Improvements, East St. Louis and Vicinity, Illinois. The Regional Forester in Milwaukee has also forwarded the copies sent to him, because national forest lands are not involved, so the following constitutes the field comments of the Forest Service.

As you know, the interest of this agency centers largely in the impact of the proposal on forested or tree covered areas. We found only one reference to impact on these areas, under the heading "Impact on Biological Aspects of the Environment": "Vacant or undeveloped areas such as old fields or the remaining patches of forest land may become developed because of improved drainage, and thus further loss of the area's already restricted terrestrial habitats may occur."

Figures 17 and 18 also give clues to the probable fate of several of the remaining patches of forest land. Occurring as they do within proposed natural detention areas, we assume they will be killed by inundation. It would seem appropriate for the draft to address this impact.

Dr. Kulfinski's concluding paragraph, and particularly his concluding sentence in Section IX of Part A of the Environmental Inventory Report is a good summary of the values at stake. His discussion of 16 forest stands studied is keyed to Figure IX-1 which we do not find in the Report, and conversely, Plate 9 in the Draft shows the numbered stands, with no reference to them in the Draft.

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2.

We also note that the Report states: "...there is a surprising amount of utilization of the 'waste lands'... for recreational hunting ... by residents of the area. This kind of recreation is of considerable value to people who live in an urban area and is perhaps unusual in being available to people that we often think of as disadvantaged. We would think that preservation of this kind of recreation ought to be a consideration in any further modification of the area." We agree with these statements, we believe that the remaining patches of forest land provide some of these values, and we think that the Draft should incorporate some of this philosophy.

4

As disinterested parties, in reading the discussion of the Relocation and Zoning Alternative, it seems to us that this alternative deserves further serious consideration.

5

We appreciate the opportunity to review and comment on the Draft.

Sincerely,

Robert M. Donald
for ROBERT D. RAISCH
Director

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

P.O. Box 678, Champaign, Illinois 61820

May 2, 1974

Mr. Arthur L. Johnson
Acting Chief
Engineering Division
U. S. Army Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101

Dear Mr. Johnson:

This is in response to your March 14, 1974 request for comments relating to the draft environmental statement for East St. Louis and Vicinity, Madison and St. Clair Counties, Illinois, Blue Waters Ditch Improvements, dated March 1974.

We have included a few editorial comments relating to the Environmental Inventory Reports, Part A and B, for your use and information.

Environmental Inventory Report-Part A

Page II-19 - "2. Silty Loam" should read "Silt Loam."

Page A-5 - "Silty Loam" should read "Silt Loam."

Page A-5 - "Bowore" should read "Bowdre."

Page A-5 - Sunbury and Maumee soil series should be deleted as they are not in this area.

Page A-14 - Section entitled "Residential, Commercial, and Light Industrial Development with Public Sewers" - Suggest it read as follows:

Residential, Commercial, and Light Industrial Development with Public Sewers	Severe: Subject to flooding; These are soils of good supporting strength but range from low to moderate in available moisture for plants.
--	---

Environmental Inventory Report-Part B

Figure 11-11 - Under legend "Silty Loam" should read "Silt Loam."



Arthur L. Johnson, 5/2/74

2

Draft Environmental Statement

Page 23, D. Soils, 1. American Bottoms, line 4 - suggest it read "and swale terrain, contain fine sandy loam or silt loam soils. The silt..."

Page 24, line 4 - change the word "silty" to "silt."

Page 24, line 5 - suggest deleting the sentence which reads "As Plate 8 indicates, the soils, with appropriate management, are good for agriculture, though they do present limitations for urban use." The plate does not indicate interpretations for agriculture or urban use. Actually the plate indicates soil surface textures. You may wish to change the title "Soils" to "Soil Surface Textures" or other appropriate title.

2

Drainage is a major benefit. From all indications the proposed project will permit installation of additional land treatment drainage systems for agricultural land but no mention of the need for drainage field ditches to utilize the improved outlets.

3

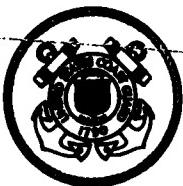
If you have questions relating to the soils, soil interpretations, fertilization, vegetation, woody plantings, borrow area development, erosion control, drainage or any soil and water conservation practice, don't hesitate to get in touch with John F. Harryman, District Conservationist, Soil Conservation Service, 415 East Main Street, Belleville, Illinois 62220, telephone 618-233-5577 or Dale R. Sherrard, District Conservationist, Soil Conservation Service, P. O. Box 482, Route #1, Old Alton Road, Edwardsville, Illinois 62025, telephone 618-656-4710.

4

We appreciate the opportunity to review and comment on the proposed project.

Sincerely,

Arthur L. Hanson, acting
Howard W. Busch
State Conservationist



**DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD**

MAILING ADDRESS:
U.S. COAST GUARD (G-WS/73)
420 SEVENTH STREET SW.
WASHINGTON, D.C. 20540
PHONE: (202) 426-2262

• 88 APR 1974

• Mr. Arthur L. Johnson
Acting Chief, Engineering Division
Department of the Army
St. Louis District, Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101

Dear Mr. Johnson:

This is in response to your letter of 14 March 1974 addressed to the Regional Federal Highway Administrator, Homewood, Illinois concerning the draft environmental impact statement for the Blue Waters Ditch Improvements, East St. Louis and Vicinity, Illinois.

The concerned operating administrations and staff of the Department of Transportation have reviewed the material submitted. The Federal Highway Administration had the following comments to offer:

"It is difficult to determine the potential impact of the Corps of Engineers proposed Blue Waters Ditch Improvements on Federally-aided highway programs in that area. Although the I-255 route was approved for a location which passes more or less through the middle of the Corps study area, the studies of I-255 are not complete. However, we believe that all necessary work on I-255 and proposed Federally-aided highway improvements in the area can be coordinated with the Corps proposal.

"We are concerned with the statement of the effect that may occur to ground-water levels (page 67, Groundwater). Sewer construction associated with highway projects often encounters high water tables in the flood plains near East St. Louis. If water tables are to fluctuate considerably as a result of the Corps' project, the difficulty in estimating construction costs for any sewer system will be increased. Maintenance of the sewer systems will also be more difficult as well as more costly.

"Probably more important than these effects on ground water and sewer systems is the potential for increased health hazard (see Health, p. 47; Pest Species, item 1, page 35). Hepatitis and/or other vector transmitted diseases associated with water contamination and water ponding appear to have a potential

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for increase, as the Corps has stated the possible adverse effects. It might be well to comment on what public health impacts can be expected if no flood control program is undertaken." 3

We have no other comments to offer nor do we have any objection to the project. However, the concern of the Federal Highway Administration should be addressed 4

The opportunity to review this draft statement is appreciated.

Sincerely,



R. J. PRICE
Captain, U.S. Coast Guard
Deputy Commander, Environmental Systems
By direction of the Commandant

FEDERAL POWER COMMISSION
WASHINGTON, D.C. 20426

AM 26 1974

Mr. Arthur L. Johnson
Acting Chief, Engineering Division
St. Louis District, Corps of Engineers
Department of the Army
210 North 12th Street
St. Louis, Missouri 63101

Reference: LMSED-BR

Dear Mr. Johnson:

This is in reply to your letter of March 14, 1974, addressed to the Commission's Advisor on Environmental Quality, requesting comments of the Federal Power Commission on a draft environmental statement for East St. Louis and Vicinity, Illinois, Blue Waters Ditch Improvements.

The proposed improvements, authorized by the Flood Control Act of 1965, include a number of new or enlarged ditches, two natural water detention areas, and a pumping station.

These comments of the Federal Power Commission's Bureau of Power are made in accordance with the National Environmental Policy Act of 1969 and the August 1, 1973, Guidelines of the Council on Environmental Quality. Our principal concern with developments affecting land and water resources is the possible effect of such developments on bulk electric power facilities, including potential hydroelectric developments, and on natural gas pipeline facilities.

The staff review indicates that construction of the Blue Waters Ditch project would not affect any bulk electric power or natural gas pipeline facilities under the jurisdiction of the Federal Power Commission. Also, the project

Mr. Arthur L. Johnson

-2-

would not appear to have any significant effect on the development of future supplies and transmission of electric power or natural gas. If remedial measures to existing utility facilities, such as relocation or protection, become necessary, such measures should be undertaken in such a manner as to minimize any disruptions of service.

Very truly yours,

William W. Lindsay

William W. Lindsay
Acting Chief, Bureau of Power



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

REGION VII

**FEDERAL BUILDING
601 EAST 12TH STREET
KANSAS CITY, MISSOURI 64106**

July 23, 1974

**OFFICE OF
THE REGIONAL DIRECTOR**

**Department of the Army
Mr. Arthur L. Johnson
Acting Chief, Engineering Division
St. Louis District, Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101**

**RE: Draft Environmental Statement
East St. Louis and Vicinity, Illinois
Blue Water Ditch Improvement**

Dear Sir:

We appreciate the opportunity to review the above referenced document which was inadvertently misplaced in our office and has resulted in a review delay. After review, it appears to this office that the impacts of the proposed action and the reasonable alternatives have been adequately addressed.

The proposed project does not have an apparent impact on the Department of Health, Education, and Welfare programs.

Sincerely

William H. Henderson
**William H. Henderson
Acting Regional Environmental
Officer**



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
CHICAGO AREA OFFICE
17 NORTH DEARBORN STREET
CHICAGO, ILLINOIS 60602

REGION V
300 South Wacker Drive
Chicago, Illinois 60606

JUL 22 1974

IN REPLY REFER TO:
5.2PP:Koziol

Mr. Arthur L. Johnson
Acting Chief Engineering Division
Department of the Army
St. Louis District, Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101

Dear Mr. Johnson:

Subject: Draft Environmental Statement
Blue Waters Ditch Improvements
East St. Louis and Vicinity, Illinois

We have reviewed the Draft Environmental Statement for the Blue Waters Ditch Improvements. We regret the delay in sending you our comments.

At the heart of this project is the difficult question of the desirability of increasing urban development on a major flood plain. Improved flood protection will encourage the continuation of urban development, both in the Blue Waters area and in the entire American Bottoms. As development increases, the interior drainage problem increases, the risk of flooding and flood damage continues, and the scope and cost of needed flood protection continues to rise.

The existing communities in the American Bottoms are clearly in need of flood protection. However, the provision of this protection should go together with a realization of the need for restraint in future development. Local communities and the counties should come to acknowledge their existence in a flood plain situation through appropriate zoning and subdivision regulations, a curtailment of development in unsound locations, requiring flood proofing where necessary, and in general through sound flood plain management practices. The provision of flood protection should not be seen as a license for uncontrolled development of the American Bottoms. Also, the design capacity of flood protection projects should not be such as to encourage maximum development of the American Bottoms.

2

Mr. A.L. Johnson, Dept of the Army, St. Louis Dist., Corps of Engrs.,
St. Louis, Mo. 63101

P.2

If the local communities are unwilling to exercise the necessary restraint, the question of costs arises. The greatest part of the cost of flood protection in the American Bottoms will be borne by Federal funds, thus spreading the cost among all the national tax-payers. If continued development demands a level of flood protection, either now or in the future, above what would otherwise be required, then it is clearly unfair for the cost burden of that additional protection to be borne by the taxpayers across the nation. The costs of flood protection for development at a level beyond what would be prudently acceptable in a flood plain should be borne by the localities themselves.

3

The question of costs goes beyond merely the costs for the flood protection projects. It also includes costs relating to the provision of an adequate quality of life, for existing areas as well as for new areas: costs for utilities, public services, health, education, social services, etc. (not to mention flood proofing of individual homes where needed). The localities should be sure that they can assume these costs as well, particularly as they continue to expand. Of course, a certain amount of growth can contribute on the plus side to this assessment of costs.

4

The point of this discussion is that the local communities and counties should seriously assess their situation and take responsibility for it. They should recognize the necessity for both prudent action and restraint on their part, rather than relying on the federal government and Army Corps of Engineers projects to bail them out of their difficulties. Flood protection projects cannot be the sole solution to the problems of the American Bottoms. Flood protection is important, certainly, but it must go together with local controls and local realization that unrestrained growth is neither feasible nor desirable in a major flood plain.

5

We feel that negotiations with local communities along these lines should be a part of the planning process for Corps projects in the American Bottoms, and that projects in this area should not proceed until some understanding has been reached with the localities on these issues.

6

Thank you for the opportunity to comment on this project.

Sincerely,
John L. Waner
Director



PROJECTS TASK FORCE

DEPARTMENT OF CONSERVATION
605 STATE OFFICE BUILDING
SPRINGFIELD 62706

June 5, 1974

Mr. Arthur L. Johnson
Acting Chief, Engineering Division
St. Louis District-Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101

Dear Mr. Johnson:

Reference is made to your letter of 14 March 1974, File LMSED-BR, requesting comments on your Draft Environmental Statement for East St. Louis and Vicinity, Illinois, Blue Waters Ditch Improvements.

The Projects Task Force has reviewed the Statement and has no major objections thereto. We do wish to point out some apparent inaccuracies and suggest some additions and changes as follows:

1. Under the section on Biological Elements beginning on page 29 the discussions of the American Bottoms and of the Blue Waters Ditch Area run together with the result that statements appear to be in conflict, i.e.
 - a. On page 34 it states that, "The large lakes receive heavy fishing pressure --". Then the last sentence of the paragraph says, "The fishing resource in the Blue Waters area is extremely limited and includes only drainage ditches and a one-acre lake (Lily Lake) which is currently under construction".

D-22

MEMBER DEPARTMENTS

Agriculture, Business and Economic Development, Conservation, Environmental Protection Agency, Health, Institute for Environmental Quality, Local Governmental Affairs, Mines and Minerals, Pollution Control Board, Registration and Education, Transportation, Governor's Task Force for Flood Control, Bureau of the Budget

Mr. Arthur L. Johnson
Page 2
June 5, 1974

2. Under "Hunting" on page 34 reference is made to deer hunting whereas in previous discussions of species present deer aren't mentioned.

3. Page 60 - Table 8

District Parks - "Population Served" column is apparently in error since it reads, "10,000-10,000". Should it be "10,000-100,000"?

4. On page 74 (G-1)

At end of the paragraph add, "This will be carried out by or in cooperation with the Illinois Archaeological Survey".

5. On page 87 - line 2

100 acres in drainage ditches apparently should be 150, the figure used throughout the Statement.

6. On page 73-F (Public Safety)

The inference in the statements on channel sides is that a 3V to 1H slope is not as steep as 2V to 1H.

7. Page 75, C

It should be clearly stated as to whether or not fences are proposed for the project and, if so, their cost estimate included.

8. Plate Nine - The Number Thirteen Tree Stand is missing.

Sincerely,



Ralph O. Fisher

ROF/b11



ILLINOIS ARCHAEOLOGICAL SURVEY

109 DAVENPORT HALL

UNIVERSITY OF ILLINOIS

URBANA, ILLINOIS 61801

Cooperating Institutions:
University of Illinois
Southern Illinois University
Illinois State Museum

March 25, 1974

Mr. Arthur L. Johnson, Acting Chief
Engineering Division
St. Louis District, Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101

Dear Mr. Johnson:

Thank you for your recent letter and enclosure of a draft ES and supporting data for the East St. Louis and Vicinity, Illinois, Blue Waters Ditch Improvements.

I have reviewed the Environmental Statement from the standpoint of its discussion of the archaeological resources of the Blue Waters Ditch area and have found it to be very adequate. The Statement lists the categories (significance) and varieties of archaeological sites present, and also discusses which of these sites will be potentially effected by the Corps project. The supporting archaeological data in the Environmental Inventory Report Part A also places the archaeological resources of the Blue Waters Ditch area in its broader relationship and perspective to the American Bottoms.

This Draft Environmental Statement with its careful review of the existing archaeology is the best draft ES your office has prepared to-date. I would like to compliment your efforts in this regard and also extend our appreciation to Dr. Sidney Denny for his work.

We encourage your office to maintain this very high quality reporting and assessment of archaeological resources in your various project areas, and I hope you will continue to use our office as a clearing house for advice on archaeological matters and personnel.

Cordially yours,

Charles J. Bareis

Charles J. Bareis
Secretary-Treasurer

CJB:dg

cc: Sid Denny



SOUTHWESTERN ILLINOIS
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May 14, 1974

Colonel Thorwald Peterson
District Engineer
St. Louis District, Corps of Engineers
210 North 12th Street
St. Louis, MO 63101

RE: Draft Environmental Statement, East St. Louis and Vicinity,
Illinois: Blue Waters Ditch Improvements

Dear Colonel Peterson:

The environmental planning staff has reviewed the EIS draft for the Blue Waters Ditch Improvements and believes it generally presents the effect this project will have on the environment. We would, however, like to point out that we believe the adequacy of the document is based on several questionable assumptions, which include:

1. Groundwater elevation is not an important factor in the design, operation and maintenance of the project facilities;
2. The increased pumping capacity (2,600 cfs) to be installed at Blue Waters when combined with runoff from Prairie Du Pont Creek and the amount of outflow from the Upper Harding Area (which is an unknown at the present time) will have no adverse effects on the capacity of the Prairie Du Pont Floodway and its levees;
3. Adequate operation and maintenance of project facilities (short and long term) will be provided by some entity;
4. Floodplain regulations can and will be enforced in areas designated in the Project Plan as natural ponding areas, and/or the State of Illinois will purchase these areas; and

D-25

Colonel Thorwald Peterson
Page 2
May 14, 1974

5. A funding source at the federal or state level will be available to local entities in constructing secondary storm drainage facilities, which will be complementary to but a necessary component of the project.

Since the need for the Blue Waters project is a critical component of the safe, efficient, and orderly development of the Metro-East, the Commission hopes that the "assumptions" listed above will be subjected to further exploration and, consequently, the nature of their effect on the environment clearly set forth in the final Environmental Impact Statement.

Sincerely,



Theodore H. Mikesell
Executive Director

THM/JB:sb

6

7



EAST-WEST GATEWAY COORDINATING COUNCIL

720 OLIVE STREET, SUITE 2110

ST. LOUIS, MISSOURI 63101

AREA CODE 618 274-2750 • AREA CODE 314 421-4220

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April 22, 1974

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Development Agency

Robert N. Hunter
Chief Engineer, Missouri
State Highway Commission

Garrad P. Jones
Chief, Bureau of
Planning, Illinois
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Al Sikes
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EXECUTIVE DIRECTOR
Eugene G. Moody

Col. Thorwald R. Peterson
District Engineer
U.S. Army Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101

Dear Colonel Peterson:

The East-West Gateway Coordinating Council, in its capacity as a designated regional clearinghouse, is required to comment on proposed projects using Federal funding within the Council's planning area.

Our staff is in the process of reviewing the Blue Waters Ditch Draft Environmental Impact Statement, and soliciting comments from agencies and units of local government that may be affected by the proposed project. Through our communication with two of these cities (St. Clair County and the Southwestern Illinois Metropolitan and Regional Planning Commission), we have become aware of a great deal of concern for the specific design details of the Blue Waters Ditch proposal. In order to address the concerns of these entities, and thereby complete our review of the Draft Environmental Impact Statement, we hereby request a more detailed description of the design of physical improvements for the Blue Waters Ditch area.

We look forward to completing our review as soon as possible. If you have any questions regarding our review, please do not hesitate to contact me.

Sincerely,

Eugene G. Moody
Eugene G. Moody
Executive Director

EGM/LZ/ik



ST. CLAIR COUNTY
OFFICE OF ADMINISTRATION

PHILLIP R. TAYLOR
Assistant Director of Administration

May 17, 1974

Colonel Thorwald Peterson
District Engineer
U.S. Army Corps of Engineers
210 North 12th Boulevard
St. Louis, Missouri 63101

Dear Colonel Peterson:

After having reviewed the EIS draft for the Blue Waters Ditch Project, I feel that there are several potential problem areas that must be addressed.

1. I am sure you realize the significance that the rising watertable will have on future projects within the Hillside Drainage Basin. I feel you should in some manner address this problem relative to the Blue Waters Ditch impact statement.
2. We would certainly like to see a definition of responsibility as to who will maintain these project facilities, both short and long range. If there will be a transfer of responsibility to another local entity, what criteria will be used to select this responsible entity and what types of assurances will be required?
3. The State of Illinois assures the maintaining of floodplains, in particular, regulatory procedures for the Blue Waters Ditch watershed. We think the regulations, rules, and procedures, should be part of this documentation.

2

3

These are our comments. We would certainly like to see these issues addressed.

Thank you very much for your cooperation in providing the local mayors the opportunity to voice their opinions on the changes made from the original design.

Sincerely,
Phillip Taylor
Phillip R. Taylor *sm*
Assistant Director
of Administration

D-28

PRT/sm

Illinois State Chapter
of the
American Fisheries Society

826 E. Washington
Havana, Illinois 62644
April 15, 1974

Colonel Thorwald R. Peterson, District Engineer
St. Louis District, U. S. Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101

RE: E. St. Louis & Vicinity, Ill., Blue Waters Ditch
Improvements

Dear Colonel Peterson:

I obtained the following information from Mr. Peter Paladino, a member of the Illinois Chapter of the American Fisheries Society and also a district fishery biologist with the Division of Fisheries, Department of Conservation:

The present status of the aquatic environment of the Blue Waters Area, is one of almost complete alteration from that which originally existed in the area. Urbanization, agricultural use and floodplain drainage projects have reduced and degraded the aquatic habitat to a level where a project like the Blue Waters Ditch proposal can only have an insignificant impact.

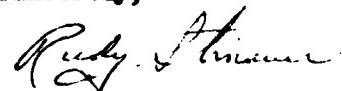
The fisheries of the area is dependent to a large extent on transient species that invade the drainage ditches of the Blue Water Area periodically during periods of high water. These fish emigrate into the area from the Mississippi River and small streams that lie in adjacent areas.

The survey of the area conducted by Dr. Jamie Thomerson, Southern Illinois University - Edwardsville, Illinois revealed a limited amount of recreational fishing occurring at the present time in drainage ditches of the Blue Waters Ditch system. As the E. St. Louis area is severely limited in recreational outlets of this nature, an effort should be made to preserve as much fishing potential as possible.

In summary the impact on the recreational fishing of the area should be minimized. The impact of the project itself on the aquatic environment and the fisheries of the area should be negligible.

,

Sincerely,



Rudy Stinauer, President
Ill. Chapter of American
Fisheries Society

cc: Dr. Weldon Larimore, EIS Chrm. of
Ill. Chap. of AFS
Wm. V. Harth. Super., Div. of Fish,
Dept. of Conservation
Peter Paladino, Dist. Fish Biologist.,
Div. of Fish., Dept. of Cons., &
member of Ill. Chap., of AFS

D-29

Promotes the Conservation, Development, and
Wise Utilization of the Fisheries

APPENDIX E

LETTERS OF REVIEW
APRIL 1975



United States Department of the Interior

OFFICE OF THE SECRETARY
NORTH CENTRAL REGION
230 S. DEARBORN STREET, 32nd FLOOR
CHICAGO, ILLINOIS 60604

ER 74/383

June 4, 1975

Colonel Thorwald R. Peterson
District Engineer
U. S. Army Engineer District
St. Louis
210 North 12th Street
St. Louis, Missouri 63101

Dear Colonel Peterson:

The Department of the Interior has reviewed the Draft Environmental Statement for the Illinois Blue Waters Ditch Improvements, East St. Louis and Vicinity, Illinois, as requested in Mr. Jack R. Niemi's transmittal letter of April 3, 1975, to our Assistant Secretary, Program Development and Budget. Our comments which are of a general nature relate to areas of our jurisdiction and expertise and have been prepared in accordance with the National Environmental Policy Act of 1969.

Except for the following additional comments the Departmental letter of May 10, 1974 still expresses our views and recommendations on the subject project and draft environmental statement.

Approximate lengths of residence time for impounded water in the reservoirs, seepage rates plus flow-through rates compared to the rapid percolation rates mentioned for the well-drained soils, evaporation rates, and quality-of-water changes during retention are needed for adequate evaluation of impacts on ground-water resources.

A water-table map is needed to provide a basis for consideration of both existing conditions and impacts of the project.

The environmental statement should include a geologic map and cross section, showing the location of known faults which may influence the geohydrology of the area as well as the integrity of proposed structural measures. This map should show the location of the Pine Prairie dome and the Reddell oil field to permit proper evaluation of impacts.



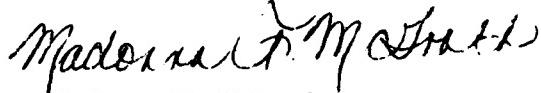
The draft statement comments that the Pleistocene Chicot aquifer, which is the major source of irrigation water in the area, is recharged by infiltration of rainfall and seepage from streams. The Evangeline aquifer of the Foley Formation is reportedly recharged by percolation of water from the overlying Pleistocene deposits. The statement should therefore evaluate effects of the proposed impoundments and any resultant changes in stream-flow regimen on recharge to the aquifers.

5

We concur with the statements that increased development in the area to be protected may lead to increased risks of which the public may not be aware (p. 71). For this reason it is important that these risks are carefully evaluated and publicized prior to the start of the project.

6

Sincerely yours,



Madonna F. McGrath
Acting Special Assistant
to the Secretary



**DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD**

MAILING ADDRESS
U.S. COAST GUARD (G-WS/73)
400 SEVENTH STREET SW
WASHINGTON, D.C. 20590
PHONE: (202) 426-2262

• J 11 5 1975

Mr. Jack R. Niemi
Chief, Engineering Division
St. Louis District, Corps of
Engineers
210 North 12th Street
St. Louis, Missouri 63101

Dear Mr. Niemi:

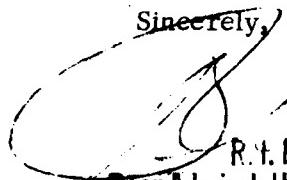
This is in response to your letter of 3 April 1975 concerning a revised draft environmental statement for East St. Louis and Vicinity, Blue Waters Ditch Improvements, St. Clair County, Illinois.

The Department of Transportation has reviewed the material submitted. The comments made in our letter of 23 April 1974 still apply and should be addressed in the final statement.

The Department of Transportation has no other comments to offer nor does it have any objection to this project.

The opportunity to review this revised draft statement is appreciated.

Sincerely,


R.T. PRICE
Rear Admiral, U.S. Coast Guard
Chief, Office of Marine Pollution
Commandant



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN STREET
CHICAGO, ILLINOIS 60604

JUN 5 1975

Colonel Thorward R. Peterson
District Engineer
U. S. Army Engineer District, St. Louis
210 N. 12th Street
St. Louis, Missouri

Dear Colonel Peterson:

In response to your letter of April 3, 1975, we have reviewed the addenda to the Draft Environmental Impact Statement (EIS) for the Blue Waters Ditch Improvements, East St. Louis and Vicinity. Although some minor changes have been made in the project, we believe the comments we submitted on the Draft EIS dated May 13, 1974, continue to represent our views concerning the project as well as the EIS.

Thank you for providing us with an opportunity to comment on the addenda and the corresponding changes in the project.

Sincerely yours,

Donald A. Wallgren
Donald A. Wallgren
Chief,
Federal Activities Branch



VICTOR P. CANTY
CHAIRMAN

ST. CLAIR COUNTY BOARD

1 South Church • Room 207 • Belleville, Illinois 62220 • (618) 234-8329

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June 9, 1975

Mr. Jack R. Niemi
Chief, Engineering Division
Department of the Army
St. Louis District Corps of Engineers
210 North 12th Street
St. Louis, Missouri 63101

Dear Mr. Niemi:

Re: Draft Environmental Statement
for East St. Louis and Vicinity,
Illinois, Blue Waters Ditch
Improvements

In reviewing the environmental impact statement put together by the Corps of Engineers, St. Louis District, we find that you have done an excellent job in answering those questions relative to any environmental problems that could possibly occur. As you know we were proponents from day one for impoundment reservoirs as opposed to dry reservoir systems and are very happy that the Corps of Engineers and the State of Illinois have finally reached an agreement that impoundment reservoirs are the most acceptable long-range for that particular Watershed. We totally support the environmental impact statement that you have put together for the Blue Waters Ditch improvement area and totally support the project.

Sincerely,

[Signature]
Victor P. Carty, Chairman
St. Clair County Board

VPC/sm

E-5

**DATE
TIME**